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SPECIAL STRENGTH.

GLASS BOTTLES · 6d. 1/. 2/. 5/ Retail.

4/, 8/, 16/, 38/ per dozen.

BULK · · · · · 1/ per lb. 100/ cwt. in 2-gallon Bottles.

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GLASS BOTTLES. 6d., 1/. 2/. 5/ Retail.

4/, 8/, 16/, 38/ per dozen.

BULK 1/ per lb. 10d. in 2-gallon Bottles.

BULK. At Special Prices. Inquiries should state quantity.

These Goods are selling well in the Agricultural districts. They are very attractively got up, are superior to any foreign makes, and are well worth the attention of the Trade, as they leave a good margin to the seller.

Attractive Show Cards and Printed Matter may be had on application.

17 TODD STREET, MANCHESTER.

3

EIGHTEENTH EDITION OF THE ORIGINAL COLLECTION OF

SPECIMENS

OF THE

ORGANIC MATERIA MEDICA.

Of the British Pharmacopæia 1885, for the use of Medical and Pharmaceutical Students.

SPECIMEN LABEL SUPPLIED WITH THE MATERIA MEDICA CABINET.

UNSOLICITED TESTIMONIAL FROM A CHEMIST.

"My son speaks in great praise of the late W. Southall's 'Organic Materia Medica,' and as he seems to have passed particularly well in this subject both at the School and Square Examinations, I think you ought to know; he tells me was one of very few who had the book."

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BAEL FRUIT.

The dried half-ripe fruit of Algle Marmelos.

NAT.ORDER. Aurantiaceae. HABITAT. Malabar and Coromandel. Characters.—Fruit roundish, more or less twisted, about the size of a large orange, with a hard, woody, nearly smooth rind; usually imported in dried slices, or in fragments consisting of portions of the rind and a iberent dried pulp and seeds. Rind about one-eighth inch thick, hard, and covered with a nearly smooth, pule-brown or grevish, firmly adherent epicarp; the pulp firm and brittle and of an orange-brown or cherry-red colour externally, but when broken it is seen to be nearly colourless internally. It has no olour, and its tasto is simply mucilaginous and very slightly acid.

PREPARATION. - Extractum Bela liquidum, I ounce in I finld ounce.

Price of the Collection, in a neat Wooden Box, £1 10s, and £2 net.

The Specimens in the more expensive set are packed separately in boxes, each being numbered, and a Key is supplied for explanation.

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HERBARIUM.—Containing all the more important British and European Medicinal-Plants contained in the 1885 Pharmacopæia, Dried, Pressed, and Mounted on Cards, so as to preserve their more important characters. These will be found of great value, especially during those times of the year when fresh plants are not to be had.

Amongst the collection will be found a Specimen of the Inflorescence, with Leaves, of Aconitum, Hyoscyamus, Belladouna Stramonium, Conium, Digitalis, Dulcamara, Colchicum, with the Mustards and Mints, and 25 others.

Price 7s. 6d. per Sct, net.

"THE ORGANIC MATERIA MEDICA OF THE B.P. 1885."

Systematically Arranged, with Brief Notices of the Remedies contained in the Indian and United States Pharmacopwias.

Fourth Edition, 1887. Pp. 248. Price 5s. each.

Besides the Official Description of the Drugs of Animal and Vegetable Origin, there are added in the above book the Natural Orders (and their Diagnosts), Habitats, Remarks, Chemical Notes, and all recent Information concerning each Drug; as also a brief description of the Adulterations which have been met with from time to time. The book has been specially designed and much enlarged for the use of Medical and Pharmacentical Students, and may be read with advantage in conjunction with the Materia Medica Cabinets issued by the firm.

Catalogue and Particulars of these and other Students' Sets free on application.

SOUTHALL BROTHERS & BARCLAY BIRMINGHAM.

THE SCHOOL OF PHARMACY

OF THE

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

FIFTIETH SESSION.

The Fiftieth Session will commence on Thursday, October 1st, 1891. Entries not previously arranged with the Dean may be made between 10 A.M. and 5 P.M. on that

day.

At the first Evening Meeting of the Pharmaceutical Society, Wednesday. October 7th, at 8 P.M., the School Prizes obtained during the past Session will be distributed by the President, after which an Address to the Students will be delivered by Mr. Gainsford Bruce, D.C.L., Q.C., M.P.

CHEMISTRY.

By PROFESSOR DUNSTAN, M.A., &c.; Assistant Lecturer, Mr. DYMOND.

The Lectures will commence on Tuesday, October 6th, at 9 A.M., and will be continued on Tuesday, Wednesday, and Thursday mornings.

PRACTICAL CHEMISTRY.

By PROFESSOR ATTFIELD, F.R.S., &c.

Demonstrator-Mr. SHORT, B.Sc.; Assistant-Demonstrators-Mr. H. D. FUGE & Mr. F. BROWNE.

The Laboratories will re-open on Thursday, October 1st. Instruction in Practical Chemistry may be had daily, between 10 A.M. and 5 P.M. Entries may be made for various numbers of hours daily, or days weekly, for any period.

BOTANY.

By PROFESSOR GREEN, M.A., &c.

The Lectures will begin on Monday, October 5th, at 9 A.M., and be continued on Monday and Saturday in each week.

PHARMACY AND PRACTICAL PHARMACY.

Lectures and Demonstrations will be given every week by Mr. JOSEPH INCE, F.L.S., &c., on Tuesdays, Thursdays, and Fridays, at 5 p.m., commencing on Friday, October 2nd. Laboratory Work in Practical Pharmacy will be carried on from 3 to 6 p.m. on Mondays and Wednesdays.

MATERIA MEDICA AND HISTOLOGY.

Lectures on Materia Medica will be given by Mr. Henry G. Greenish, F.L.S., &c., on Fridays, at 9 A.M., commencing on October 9th. The Course of Practical Histology will extend from April to the end of June.

Application for admission to the School, for Prospectuses, or for information or advice may be made to the Dean, Prof. Attfield, F.R.S., or to the Professors or their Assistants in the Lecture Room or Laboratories, 17 Bioomsbury Square, London, W.C.

SOUTH LONDON

SCHOOL OF PHARMACY

(LIMITED).

325 KENNINGTON ROAD, LONDON, S.E.

FOUNDED 1868.

INCORPORATED 1887.

HEADS OF

Chemistry, Physics, and Botany.
Dr. Muter, M.A., F.R.S.E., F.I.C., F.C.S., &c.

Materia Medica and Pharmacy. W. H. Dodd, F.C.S., &c. DEPARTMENTS.

Analytical Chemistry.

L. DE KONINGH, F.I.C., F.C.S.

Latin, Mathematics, and Mechanics.
W. Townsend, A.C.P. & Lond. Matric.

The special claims of this Institution to the attention of intending students are:

- (1.) That it is the oldest established School of Pharmacy in Great Britain outside the Pharmaceutical Society.
- (2.) That it possesses a perfectly fitted Students' Laboratory, where 40 men can work at once, each having water, gas, and all conveniences at his own place, and all facing the demonstrators.
- (3.) That it has a Museum of Drugs, &c., enriched by twenty-three years of collection and gifts, second only to that of the parent society; the students' specimens being renewed annually.
- (4.) That it provides a DISPENSARY capable of accommodating 20 students at a time, for the use of which no extra charge is made.
- (5.) That it possesses a Technical Laboratory fully fitted with steam power, stills, &c., where students can learn the manufacture of galenicals on the working scale.

- (6.) That it has in addition Special Laboratories devoted to quantitative work, including one for water and air analysis, another for assaying and furnace work, and a third for microscopic, polariscopic, spectroscopic, and similar investigations.
- (7.) That its students have for years maintained a regular percentage of success at examinations, and that at certain examinations every student sent up has passed at his first trial.
- (8.) That all the Fees are Absolutely Inclusive, and there are no extra charges of any kind.
- (9.) That Periodical Examinations are held by visiting examiners appointed by the Council of Education of the School, and Medals and Certificates of attendance and merit are awarded to the successful students at such examinations.
- (10.) That all its lecturers are men of long experience and of standing in their particular branches.

FOR SYLLABUS APPLY TO THE SECRETARY.

N.B.—The Session extends from the middle of September to the middle of July, and the best times to commence are September, January, and April, but students may enter at any time provided there is room. Some notice is generally necessary to secure a vacancy.

THE WESTMINSTER COLLEGE OF CHEMISTRY,

TRINITY SQUARE, BOROUGH, LONDON, S.E.

(Ten Minutes' Walk from London Bridge).

THE LARGEST PHARMACEUTICAL SCHOOL IN GREAT BRITAIN.

Open free to Visitors from 3 till 4 every afternoon, Saturdays excepted.

Principals, Messrs. WILLS & WOOTTON.

Director, Mr. G. S. V. WILLS, Microscopist and Analytical Chemist.

Fellow of the Linnean Society, Fellow of the Royal Microscopical Society, Fellow of the Royal Botanic Society, Member of the Pharmacentical Society of Great Britain, Member of the Society of Chemical Industry, Examiner in Chemistry, Society of Science, South Kensington, &c.

The next Term will commence on Tuesday, Oct. 27, but Students can enter at any time provided there is room.



MINOR LABORATORY OF THE WESTMINSTER COLLEGE (74 BENCHES).

No greater proof of the thoroughness of the education imparted can be given than the number of Students who pass their examinations annually from this College.

The names are published after each examination in the Pharmaceutical Journal, which is far more trustworthy than the mere statement of figures.

It will be seen from the published Pass Lists of this College that nearly as many Students pass the Pharmaceutical Examinations from this College as from all other sources combined.

MINOR EXAMINATION IN LONDON — JUNE, 1891.

36 Candidates failed, 19 passed.

From the WESTMINSTER COLLEGE 15 Students presented themselves, 9 passed.

BERTULES, PROSPER BROWNING, EDWIN CARR, HARRY J. HATTON, FOSTER J. GALE, RICHARD P. HILL, JOHN LIGGINS, THOMAS B. PARSONS, ERNEST A. TILTMAN, W. J.

From ALL OTHER SOURCES COMBINED 40 presented themselves, and only 10 passed.

ALLENBY, HENRY E. ASHTON, HENRY M. CATTELL, CHARLES DAVIS, GEORGE E. FELCE, ALBERT BARNES, IVOR P. DONINGTON, R. S. HINDE, ALBERT H. NICHOLSON, THOMAS B. WALTON, JOSEPH W.

ANALYSES-CHEMICAL & MICROSCOPICAL.

A discount of 50 per cent. allowed to Pharmaelsts and the Medical Profession.

EVENING CLASSES.

Are held every Tuesday, Wednesday, and Thursday, from 7 till 9. Fee, 3 months, £1 1s.; 12 months, £3 3s.

BALMFORD, J. A., Huddersfield BEALE, H. S., Cambridge BECKETT, E. J., Lowestoft BENTON, W., Loughboro' BINDLO'S, H. M., London BRAY, G. R., Launceston COLE, W. H., Bristol ORAWLEY, W. P., Oundle DAVIES, O., Pontypridd ELLIOTT, S., Oswald Kirk EVANS, M. D., Llaudilo FORD, T. M., London FLATMAN, F. J., Cambridge GEOROE, W. A. W., Hirwain GOODWIN, G. E., London GOLDTHORPE, A., Doucaster GRATTE, A., Newport GREEN, J. W., Nunbead HAY, R., Dingwall HEPPENSTALL, P., Hull HODGSON, J. D., Sunderland HORNSBY, J. W., Darlington ISLIP, F., Dartford

For Prospectus and other particulars, apply to-Messrs. WILLS & WOOTTON, Trinity Square, BOROUGH, LONDON, S.E.

LONDON, JULY, 1891.

219 Minor Candidates failed, 129 passed.
The following 48 Students passed from the Westminster College:—

MAJOR.

ATKINSON, J. W.....Spilsby | Drabble, T. L....
GARNER, W. L.....London.

JORS, W. O., Market Drayton Jones, W. S., Aberdare Johnson, F., Chatham Maude, G. W., Bradford Moroan, L. Mertbyr Tydfil Mousley, W. J., Redditch Oswell, W. H., Corweu Raf, A. D., Aberdeeu Roadnight, J. R., S. Norwood Simpson, S. R., Llandilo Smith, A., Forest Hill Soper, H., Plymouth Stratford, H., Plymouth Stratford, H. O., Margate Toyne, C. R., Hull Troupe, G. R., Middlesboro' Thomas, W., Portobello Thomas, W., C., London Vernon, W., Middlesboro' Wharmhy, W. F., Malfield White, J. W., Stony Stratford Whitehouse, J. W., Bradford Workman, B, L., Leytoustone

ESTABLISHED 1882.



INCORPORATED 1888.

THE CITY SCHOOL OF CHEMISTRY AND PHARMAGY, LIMITED,

27 CHANCERY LANE, LONDON, W.C.

Largest and Best Equipped Pharmaceutical School in the Metropolis.

Under the direction of Mr. MAURICE WILLIAMS,

Mr. T. A. ELLWOOD, A.I.C., F.C.S., M.P.S., &c.; Mr. MARTIN J. COLE, Microscopist; Mr. E. A. J. HAYWARD, Tutor

Since the Pharmaceutical Department was opened, it has met with far greater success than the most sanguine of the Proprietors expected. There will be nothing wanting on the part of the management to further the work and keep up the reputation of the School. Our policy is to do all we can for the gentlemen who place themselves in our charge, by employing the best of teachers and by making the Laboratories, &c., spacious and well equipped, so that the knowledge they seek can be acquired with comfort and without impairing health—an important factor when reading for an examination.

The Professors are always in attendance (not during lecture hour only), and Students are invited to seek their aid whenever in difficulty. The Proprietors have realised the fact that Pharmaceutical Students should be treated as gentlemen preparing for an honourable profession, hence—using the words of a critic—their lavish expenditure in making this Pharmaceutical School perfect in all its appointments. Photographic Drawings are always deceiving, therefore Students are invited, before they enter elsewhere, to make it their business to inspect the arrangements at the City School.

The Laboratories are fitted with all modern improvements, Electric Light, Gas, and constant Water Supply to every Bench. All requirements, Books excepted, provided for Pupils, both in the Chemical Laboratory and in the Dispensary. The arrangements for the Dispensing Classes are so complete that it is a rare occurrence for a City School man to fail at the Examination.

In addition to all these advantages, the Fees at the City School are about 25 per cent. lower than at other schools.

Prospectus post free, and full particulars on application to any of the Professors, or to

REGINALD HARRISON, Secretary,

27 Chancery Lane, London, W.C.

"CONCILIO ET LABORE."

THE MANCHESTER COLLEGE

OF

Chemistry and Pharmacy,

225 & 227a OXFORD STREET, MANCHESTER.

ESTABLISHED 1877. M

MANCHESTER 1882.

DIRECTORS-

MR. W. SPENCER TURNER, MR. CHARLES TURNER, F.C.S. PHARMACEUTICAL CHEMISTS.

The premises of the M.C.P. are very spacious, including two large Class-rooms, a Laboratory with twenty benches, a Dispensary the same size, and a Museum, all provided with every requisite for Minor students; while the Majors have their own Laboratories (two) and Class-room. The Class-rooms contain numerous charts. Botany is taught practically by fresh and dried specimens, the microscope, and demonstrations. Pharmacy specially is fully treated of, the Messrs. Turner being well acquainted with manufacturing processes. The Dispensary receives great attention, and all work in the Laboratory is carefully directed.

The Major students have the advantage of Mr. Chas. Turner's practical knowledge of advanced Organic and Inorganic Chemistry and Physics in their practical and theoretical studies of these subjects, while Mr. W. S. Turner's long experience and study is especially useful in the various branches of Botany and Materia Medica.

It must never be forgotten that it is to Mr. W. Spencer Turner's work that the success of Manchester as a centre of Pharmaceutical Education is very largely due—that it is he who makes

THOROUGHNESS AND SUCCESS

his motto, and that "Turner's" is, as it has been for nearly ten years,

The MANCHESTER College of Pharmacy.

An extra set of ALL the Minor and Major Classes will begin work on or about OCTOBER 12th, so tha local students can join after the holidays are quite over, and work steadily up to April (or July), with a fortnight's break at Christmas.

The July Pass List included Twelve Minors, that for April Three Majors and Eight Minors. The following extracts are from letters received from students who passed in July:—

"I must thank you for the kind attention you gave me during my stay in Manchester, and if at any time I have any friends wishing to attend a course of lectures I shall advise them to come to you.

S. D."

"I beg to acknowledge, with thanks, the certificate, which reached me safely; it, and the other, will be useful and pleasant reminders of you. I think I have persuaded to come to you, as I feel sure he will pass if he goes lu from the 'M.C.P.'

"I always found you anxious to do the best for those under your tuition, and I take this opportunity to thank you sincerely for what you have done for me. It will always be

my pleasure to recommend your college to anyone who intends to go in for the Pharmaceutical Examinations.

"I thank you for the Interest you took in my work while I was at the 'M.C.P.,' and it is needless to add that it will always be a pleasure to me to recommend others to visit you.

W. H."

"Before going into details I feel I ought to thank you most heartily for the kind and untiring way in which you made the subjects clear to my dull comprehension, as I can only attribute my success to your efficient teaching, and shall always recommend your College to inquiring students.

THE

LIVERPOOL SCHOOL OF PHARMACY

NEWINGTON, LIVERPOOL.

PRINCIPAL:

WARD, Ph.Ch., F.C.S., Mr.

(CONSULTING AND ANALYTICAL CHEMIST).

COMMITTEE OF EDUCATION

(Appointed by the Council of the Liverpool Chemists' Association to visit the school from time to time and otherwise control the course of study):

Mr. C. Symes, Ph.D., President of the Association;

,, T. F. ABRAHAM, ,, M. CONROY, F.C.S.,

A. C. ABRAHAM, F.C.S., F.I.C., Member of the Council of the Pharmaceutical Society.



Laboratory of the Liverpool School of Pharmacy, which has an Area of 70 Square Yards, is lighted by 9 Large Windows, and has Bench Accommodation for 30 Pupils.

LIST OF CLASSES.

- 1. Full-time Classes for Minor and Major Students, from 10 a.m. to 5 p.m. daily.
- 2. Afternoon Class for Minor Students, 3 to 5 p.m. daily.
- 3. Evening

8 to 10 p.m. four nights weekly.

4. Once-a-week,,

- 3 to 10 p.m. on Wednesdays, doing all the subjects.
- 5. Part-time Classes for Major Students on Mondays.

HIGHER EDUCATION.

During the vacation extensive alterations have been made to meet the requirements of the New Schedulc. . . . The accommodation and appliances of the Chemical Laboratory have been increased, a Pharmaceutical Laboratory constructed, and provision made for practical microscopic work in Botany and Materia Medica.

Syllabus, with full particulars of all the Classes, Time-tables. Fees, Pass Lists, &c., sent post free on application to the Principal.

THE

LIBRARY

NORTHERN SCHOOL OF PHARMACY

100 Burlington St., MANCHESTER.

Principal-Mr. GEO. CLAYTON.

Demonstrators: Mr. ARTHUR WELLINGS, Mr. J. H. HEAP.

At the July Examinations, 26 Students entered from the NORTHERN SCHOOL; 20 passed, namely-

MAJOR-Mr. J. H. Bates, Manchester; Mr. W. E. Clarke, York; Mr. S. S. Holford, Godley.

All at their first attempt. The two latter also passed their Minor from this School first time.

Mr. J. Brooks, Manchester; Mr. T. Burnett, Lytham; Mr. J. S. Eatough, Blackburn; Mr. T. H. Gee, Macclesfield; Mr. C. H. Griffiths, Openshaw; Mr. J. Hodgkin, Treales; Mr. H. Jones, Manchester; Mr. E. H. Jones, Mossley; Mr. W. Littlefair, Pendleton; Mr. G. W. Moram, Glossop; Mr. A. Oliver, Manchester; Mr. J. B. Pater, Brighton; Mr. F. W. Scruton, Boroughbridge; Mr. W. A. Thomas, Southport; Mr. H. A. Watkinson, Farnworth; Mr. A. Wellings, Buxton; Mr. G. B. Wright, Doncaster.

The greater number at their first attempt.

From July, 1890, to July, 1891, 13 Majors and 45 Minors passed from the Northern School. The continuity of success achieved by the Students fully justifies its title, as, in addition to the great success of its Minor men, the Northern School prepares and passes a greater number of Major men than any school in the North of England.

The New Schedule of Subjects has necessitated very little change in the routine of the Theoretical Classes, as, with slight exceptions, the whole of the ground was covered by the former course of work pursued at the Northern School; but the subjects of Practical Pharmacy and Volumetric Analysis are now exhaustively treated, Minor Students going through a specially-arranged course of each subject.

New Laboratories have been erected for Minor and Major men. They are excellently lighted, ventilated, and fitted with every modern appliance for Pharmaceutical and Analytical work. Each Student is under the direct and daily supervision of the Principal—the tuition amounting to personal attention.

There are three distinct Sets of Classes running for Minor and Major :-

(a) Full Time Day Course.

(b) Afternoon Course.

(c) Evening Course.

The Fees are absolutely inclusive, there being no extras of any kind. All Apparatus, &c., provided free.

Prospectus, with Supplement and Pass Lists, posted to any address.

THE SHEFFIELD COLLEGE OF PHARMACY

118 THE MOOR, SHEFFIELD.

ESTABLISHED 1887.

PRINCIPALS Mr. R. B. GREAVES, Ph.C., F.C.S.

THIS College was established four years ago to meet the requirements of local Students, but, owing to the increased number of entries, both from home and at a distance, it was found necessary to remove to larger and more central premises.

The College is fitted with every requisite necessary for Pharmaceutical and Higher Examinations.

The Principals spend the whole of their time with the Students, thus assuring success even of the most backward Student.

N.B.—The Courses in Theoretical and Practical Chemistry, Physics, Materia Medica, and Pharmacy are accepted by the Royal Colleges of Physicians and Surgeons, England; thus a Student who may anticipate at some future date going in for the Medical Profession saves considerable expense and time in having attended Lectures at this College.

In proof of the thoroughness of the Instruction given at this College, we may state that 83 per cent. of the Students sent from here have been successful this year, most at their first attempt.

MINOR FEES.

ONE MONTH, DAY CLASSES £3 3 0
TWO MONTHS , , 5 10 0
THREE , , , 8 8 0

MAJOR FEE.

THREE MONTHS, DAY CLASSES ... &6 6 0

All Fees are inclusive and Payable in Advance.

PROSPECTUS ON APPLICATION.

FREDERICK DAVIS, B.Sc.

Propares Gentlemen privately for all Examinatious in Chemistry, Materia Medien, Botany, Pharmacy, Physiology and Biology, including the Minor and Major of the Pharmaceutical Society, Apothecaries' Hall, Conjoint Examining Board of Royal Colleges of Physicians and Surgeons (Primary),

A unique feature of Mr. Davis' method of tuition is that each Candidate is taken by bim individually—in fact, there is no "Class Work," and the consequent passing lightly over one Student in favour of another.

Students may take a Single Subject if desired.

References will be sent to gentlemen desiring them; the hitherto phenomenal success of Mr. Davis' pupils, however, speaks for itself.

FEES: SIX WEEKS' COURSE FIVE GUINEAS.

NO SOUNDER INSTRUCTION CAN BE OBTAINED IN ANY EDUCATIONAL ESTABLISHMENT.

26 & 28 NEWINGTON CAUSEWAY, S.E.

CHARING CROSS HOSPITAL MEDICAL SCHOOL. The WINTER SESSION, 1891-92, will commence on Thursday, October 1st.

The Hospital has a service of 210 beds for Clinical Teaching, including those of the adjoining Royal Westminster Ophthalmic Hospital, to which General Students

adjoining Royal Westminster Ophthalmic Hospital, to which General Students are free.

TWO ENTRANCE SCHOLARSHIPS, of the value of 100 guineas and £0 guineas respectively, are awarded annually in October.

A SCHOLARSHIP of the value of 50 guineas is open to students from the University of Oxford who have passed the 1st M.B. Examination, and to Students from the University of Cambridge who have passed the 2nd M.B. Examination, and who have not entered at any London Medical School.

Candidates for the above Scholarships are required to give notice to the Librarian of their intention to compete on or before Saturday, September 19th.

FEES.—For the curriculum of Study required by the varions examining bodies and hospital practice, 90 guineas in one sum, or 100 guineas in five instalments. The composition fee for Dental Students is 54 guineas in one sum, or 60 guineas payable in two instalments, of 30 gnineas each.

A renortion will be made in the case of students who produce Certificates on joining the School of previous attendance on Chemistry, Practical Chemistry, and Materia Medica, and an additional reduction is made to Dental Students not at present requiring Practical Physiology

*** The hours of Lectures have been specially arranged to sult the convenience of Dental Students. Charing Cross Hospital is within three minutes' walk of the Dental Hospital of London.

A prospectus containing much additional information will be forwarded on application to the Librarian and Secretary, Mr. J. Francis Pink, at the Office of the School, Chandos Street, Charing Cross, between the nours of 10 and 4.

STANLEY BOYD, Dean.

THE MIDDLESEX HOSPITAL MEDICAL SCHOOL,

THE WINTER SESSION will OPEN on THURSDAY, .L OCTOBER 1st, at Three P.M., when an Introductory Address will be delivered by Dr. WM. DUNCAN, F.R.C.S.

The ANNUAL DINNER of the past and present Students and their Friends will take place the same evening at the Holborn Restaurant, at 7 o'clock, B. Thompson Lowne, Esq., F.H.C.S., in the chair.

HOSPITAL STAFF AND LECTURERS.

Consulting Physicians-Dr. Goodfellow, Dr. Henry Thompson.

Physicians-Dr. Cayley, Dr. Sidney Coupland, Dr. Donglas Powell, Dr. D. W. Finlay.

Assistant Physicians-Dr. J. K. Fowler, Dr. C. Y. Biss, Dr. J. J. Pringle, Dr. W. Pasteur.

Obstetric Physician-Dr. W. Dunean.

Consulting Physician to the Skin Department-Dr. Robert Liveing.

Physician to the Skin Department - Dr. J. J. Pringle.

Assistant Obstetrie Physician-Dr. R. Boxall.

Consulting Surgeon-Mr. Nunn.

Surgeons Mr. J. W. Hulke, F.R.S., Mr. George Lawson, Mr. Henry Morris, Mr. Andrew Clark.

Assistant Surgeons-Mr. A. Pearce Gould, Mr. J. Bland Sutton.

Ophthalmic Surgeon-Mr. William Lang.

Aural Surgeon-Mr. Arthur Hensman.

Consulting Dental Surgeons-Sir John Tomes, F.R.S., Mr. J. S. Turner

Dental Surgeon-Mr. Storer Bennett.

Assistant Dental Surgeon-Mr. W. Hern.

Other Lecturers-Mr. B. T. Lowne, Mr. Foster, Dr. W. J. Mickle.

The Hospital contains 310 Beds. There are Special Departments for Cancer, Syphilis, Diseases of Women and Children, Diseases of the Eye, Skin, Throat and Ear, and for cases requiring Electrical Treatment.

There are eighteen Resident Clinical Appointments open to Students of the Hospital annually.

Two Entrance Scholarships, value £100 and £60, will be competed for on September 29th and 30th.

Inclusive Fee 100 gnineas, or by three yearly instalments of 45 gnineas, 40 guineas, and 25 guineas.

The Residential College adjoining the Hospital provides accommodation for thirty Students.

For further information apply at the Hospital to the Resident Medical

For further information apply at the Hospital to the Resident Medical Offleer, or to

A. PEARCE GOULD, Dean.

THE LONDON HOSPITAL AND MEDICAL CCLLEGE.

HOSPITAL STAFF.

CONSULTING PHYSICIANS—Sir Andrew Clark, Bart., LL.D., F.R.S., Dr. Ramskill, and Dr. Langdon-Dowu.

Consulting Surgeons-Mr. Jonathan Hutchinson, LL.D., F.R.S., Mr. Couper, and Mr. Rivington.

Physicians—Dr. Hughlings Jackson, F.R.S., Dr. Fenwick, Dr. Stephen Mackenzie, Dr. Sansom, Dr. Turner, Dr. Gilbart Smith, Dr. Warner, Dr. Ralfe.

Assistant-Physicians-Dr. James Anderson, Dr. Percy Kidd, and Dr. F. J. Smith.

SUROEONS-Mr. Waren Tay, Mr. McCarthy, Mr. Frederick Treves, Mr. O. Mansell-Moullin, Mr. Hurry Fenwick.

Assistant-Suroeons-Mr. Reeves, Mr. Eve, Mr. J. Hutchinson, junr., Mr. Openshaw.

OBSTETRIC PHYSICIAN-Dr. Herman.

Assistant Obstetrio Physician-Dr. Lewers.

OPHTHALMIC SURGEONS-Mr. Waren Tay, Mr. Eve.

PHYSICIAN TO THE SKIN DEPARTMENT-Dr. Stephen Mackenzie.

AURAL SURGEONS-Dr. Edwd. Wonkes, Mr. Mark Hovell.

SURGEON-DENTIST-Mr. Barrett.

LECTURERS.

Medicine-Dr. Stephen Mackenzie.

Surgery-Mr. McCartby.

Anatomy-Mr. Treves.

Physiology and Histology-Mr. Mansell-Moullin.

Chemistry-Dr. Meymott Tidy.

Pathology-Dr. James Anderson.

Midwifery-Dr. Herman.

Toxicology-Dr. Meymott Tidy.

Medical Jurisprudence-Dr. Sansom.

Public Health and Sanitary Science-Dr. Sansom, Dr. Tidy, Mr. Eve, Mr. Page.

Materia Medica and Therapeutics-Dr. Warner.

Botany-Dr. F. Warner.

Comparative Anatomy-Mr. Mansell-Moullin.

Experimental Physics-Mr. Page.

Ophthalmic Surgery-Mr. Eve.

Diseases of the Ear-Dr. Woakes.

Diseases of the Throat-Mr. Mark Hovell.

Anatomy and Pathology of the Teeth-Mr. Barrett.

Practical Anatomy-Mr. T. H. Opensnaw.

Practical Chemistry-Mr. Page.

Operative Surgery-Mr. McCartby. Practical Surgery-Mr. J. Hutchinson, junr.

Demonstrators of Morbid Anatomy-Dr. Turner, Dr. Peroy Kidd, Mr. Eve.

Pathological Histology and Bacteriology-Mr. Eve.

Ancesthetics-Dr. Hewitt.

Emeritus Professor of Medicine -Sir Andrew Clnrk, Bart., F.R.S. Emeritus Professor of Surgery-Mr. Jonathau Hntchinson, F.R.S.

The SESSION 1891-92 will commence on Thursday, October 1, 1891. The Old Students' Dinner will be beld in the College Library at 7 P.M. The chair will be taken by Mr. Jonatban Hutchinson, LL.D., F.R.S.

The Hospital, which is the largest General Hospital in the kingdom, contains nearly 800 beds. Number of In-patients last year, 9,806; Outpatients, 120,158; Accidents, 8,847.

Surgical operations daily.

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Special Classes for the Preliminary Scientific and Intermodiate M.B. Examinations of the University of London, and for the Primary and Pass Examinations for the Fellowship of the Royal College of Surgeons of England, are hold throughout the year.

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The WINTER SESSION begins on THURSDAY, OCTOBER 1st.

The Hospital contains 695 Beds, of which 500 are in constant occupation. Special Classes are held for the M.B. Camb. and Lond., the F.R.C.S. Eng., and other higher examinations.

APPOINTMENTS .- All Hospital appointments are made in accordance with the merits of the candidates, and without extra payment.

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UNIVERSITY COLLEGE, BRISTOL MEDICAL SCHOOL.

The WINTER SESSION will commence on Thursday, October 1.

LECTURERS.

Medicine.—E. Markham Skerritt, M.D. Lond., B.S., B.A., F.R.C.P., and R. Shingleton Smith, M.D. Lond., B.Se., F.R.C.P. Surgery.—N. C. Dobson, F.R.C.S., and J. Greig Sunth, M.B., C.M., M.A. Anatomy.—W. H. Harsant, F.R.O.S. Practical Anatomy.—Demonstrators, W. M. Barelay, F.R.C.S., and J. P. Bush, M.R.C.S.

Physiology.—Lecturer, G. Munro Smith, M.R.C.S.

Assistant Lecturer, J. Michell Clarke, M.A., M.B. Cantah.,
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Practical Pathology and Morbid Anatomy.

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SESSION 1891-92.

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The Next Session commences Wednesday, Sept. 30, 1891.

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Physics, Theoretical and Practical -Mining and Mineralogy

(M.R.I.A.
Professor G. A. J. COLE, F.G.S.
Professor J. P. O'REILLY, C.E., M.R.I.A.
Professor T. JOHNSON, D.SC., F.L.S.
(Dean of Faculty for Session).
Professor A. C. HADDON, M.A., F.Z.S.,
M.R.I.A.

Zoclogy.....

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Programmes may be obtained on application at the College, or by letter addressed to the Secretary, Royal College of Science, Stephens Green, Dublin.

The first term of the Session will commence on Monday, Oct. 5, 1891.

Note.—Intending Associate Students will be required to pass an Enrance Examination in Elementary Mathematics and Elementary Practical Geometry, as indicated on page 5 of Programme, copies of which may be had on application from the Secretary.

Professor J. P. O'REILLY, Secretary.

UNIVERSITY OF EDINBURGH

SESSION 1891-92.

Principal-SIR WILLIAM MUIR,

K.C.S.I., D.C.L., LL.D., Ph.D.

The Classes for the different Brauches of Study will be opened as follows, and will meet daily (Saturdays excepted) unless otherwise specified.

FACULTY OF MEDICINE.

Dean-Professor THOMAS R. FRASER, M.D.

Practice of Physic, Taesday, October 13, nine. — Professor Grainger Stewart, M.D.

Chemistry, Tuesday, October 13, teu.-Professor Crum Brown, M.D.

Practical Chemistry, Tuesday, December 1, eleven, twelve, and two.—Professor Crum Brown, M.D.

Surgery, Tuesday, October 13, two.—Professor Chieuc, M.D.

Institutes of Medicine or Physiology, Tucsday, October 13, eleven.— Prof. Rutherford, M.D.

Practical Physiology, Wednesday, October 14, nine.—Professor Rutherford, M.D.

Midwifery and Diseases of Women and Children, Tuesday, October 13, ten.—Professor Simpson, M.D.

Clinical Surgery (Royal Infirmary, Monday and Thursday), Thursday, October 15, twelve.—Professor Aunandale, M.D.

Clinical Medicine (Royal Infirmary, Tuesday and Friday), Tuesday, October 13, twelve to two.—Professors Grainger Stewart, T. R. Fraser, and Greenfield, and Professor Simpson on Diseases of Women.

Anatomy, Tuesday, October 13, one.—Professor Sir William Turner, M.B. Practical Anatomy, Thureday, October 1.—Professor Sir William Turner, M.B.

Anatomical Demoustratious, Tuesday, October 13, four.—Professor Sir William Turner, M.B.

Materia Medica, Tnesday, October 13, two.—Prof. Thomas R. Fraser, M.D. Practical Materia Medica (including Pharmacy), Wednesday, October 14, ten.—Professor Thomas R. Fraser, M.D.

General Pathology, Tuesday, October 13, three.—Professor Greenfield, M.D. Practical Pathology, Tuesday, October 13.—Professor Greenfield, M.D.

Practical Botany (Advanced), Tuesday, October 13, four—Profesor Bayley Balfour, M.D., D.Sc.

Practical Botany (Elementary), Tuesday, October 13, four.—Professor Bayley Balfour, M.D., D.Sc.

Public Health Lectures (in Spring).—Professor Sir Douglas Maclagan, M.D. Natural History, Tnesday, October 13, two.—Professor Ewart, M.D.

Advanced Class, Tuesday, October 13, two.—Professor Ewart, M.D.

Elementary Practical Zoology, Tuesday, October 13, eieveu.—Professor Ewart, M.D.

Advanced Practical Zoology, Wednesday, October 14, onc.—Prefessor Ewart, M.D.

Olinical Instruction in Royal Infirmary, twelve.—The Clinical Professors.

Mental Diseases (given in Summer Session).—Lecturer, T. S. Clouston, M.D.

Diseases of the Eye (given in Summer Session).—Lecturer, Douglas Argyll

Robertson, M.D.

Clinical Instruction on Diseases of Children at Royal Hospitai fer Sick Children, Saturday, October 17, 11.45—Lecturers, James Carmichaei, M.D., and John Playfair, M.B.

Comparative Embryology, Tuesday, January 5, two-Lecturer, George Brook.

The Students' Reading Library, in the University New Buildings, is open dally, from 9 A.M. to 5 P.M., except on Saturdays, when it is closed at 12 noon.

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Information relative to Matriculation and the Curricula of Study for Degrees, Examinations, &e., &e., may be obtained on application to the Clerk of Senatus, or to the Dean of the Facuity of Medicine; and full details are also given in the University Calendar, published by James Thin, 55 South Bridge, Edinburgh.

By Anthority of the Senatus,

September, 1891.

JOHN KHRKPATRICK, Sec. Sen. Acad.

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WINTER SESSION.

	CLASSES.					PROFESSORS AND LECTURERS.		
ľ	Anatomy Juni Senic Prac Oste	or tical	••	11-12 4-5 10-5 12	::}	Henry E. Clark, M.R.C.S., and Demonstrators.		
I	Zooiogy Practical Zooiogy Advanced Embry		••	12-1 10-0 4-5	::}	Edward E. Prince, B.A.		
ı	Chemistry			I0-11		James M. Milne, Ph.D.		
ŀ	Surgery			11-12		D. N. Kuox, M.A., M.B.		
ľ	Medicine		• •	I2-1		Alex. Rohertson, M.D.		
ł	Materia Medica			3-4		John Dougall, M.D.		
ı	Pnysiology			1-2		Jobn Barlow, M.D., F.R C.S.		
Į	Pathology			4-5		J. Lindsay Steven, M.D.		
Ì	Gynæcology			1-2, M.W.F.		J. K. Keily, M.D.		
l	Ophthalmology					J. R. Wolfe, M.D., F.R.C.S.		
l	Throat and Nose	• •				David Newman, M.D.		
	Clinical Surgery		••	9–10.30	{	William MacEwen, M.D., LL.D., and the Surgeons of the Royal Infirmary.		
-	Clinical Medicine		• •	10–11.30	{	David C. McVail, M.B., and the Physicians of the Royal lufirmary.		

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A Caleadar may be obtained from Prof. J. Robertson Watson, M.A.,

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For the Manufacture of Tooth, Hair, Nail, and Cloth Brushes only

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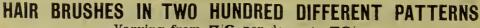
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Price 90/- per Gross.

They recommend themselves after a few times using.



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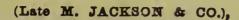
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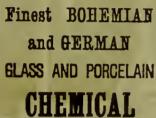
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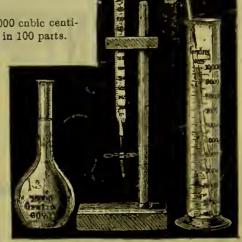
1 Wooden Burette Stand.

1 Cylindrical Glass Jar, 10,000 grains (or 1,000 cnbic centimetres), graduated in 100 parts.

1 Flask, gauged at one mark in neck to deliver 10 000 grains (or 1,000 cnbic centimetres).

Glass Rod.

The whole safely packed in wooden box and sent carriage paid to any part of the United Kingdom on receipt of a P.O. for 10s., or with glass stopcock instead of metal pinch-cock, 12s.



THE NEW DRUGGIST'S LABEL CABINET

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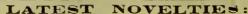
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PARTICULARS

APPLICATION.

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Labels indestructible and of elegant appearance, forming an even surface with the glass or porcelain. The Jars of best porcelain, thoroughly greaseproof. The Bottles hand-made and of superior quality. Both are unsurpassed by anything in the market in every respect. Also a CHEAPER sort of Bottles and Jars, with labels equally indestructible, but very plain, especially autable for Dispensaries, &c. Intending Enyers are requested to inspect Samples.



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Continental pattern; very portable and powerful.



With solid metal horseshoe foot, rack-and-pinion adjustment to draw-tnbe, condenser, divisible triplet objective, revolving diaphragm, with accessories, magnifying 120 times,

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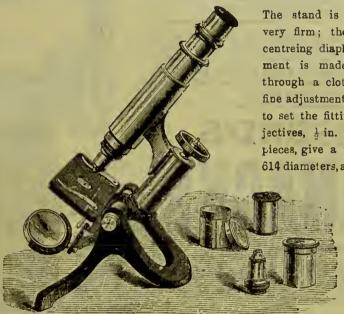
Standard do., Fig. 3

Lens Front do. Fig. 1

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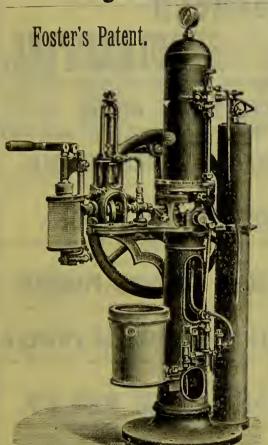
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St. George's, Middle St. NORWIOH,
December, 1887.

The Excise Authorities having created a difficulty as to the sale of Medicated Wine containing a certain percentage of alcohol, we obtained in January last, from the Inland Revenue Authorities, permission to sell our WINCARNIS,* or Liebig's Extract of Meat and Malt Wine, WITH QUININE, without a Wine Licence, and many Chemists not holding a Wine Licence have sold considerable quantities. In order further to meet the requirements of the trade, we have introduced a Liebig's Extract of Meat and Malt Wine, NON-Alcoholic, made from the juice of the Grape, Liebig's Extract of Meat, and Extract of Malt. This also can be SOLD WITHOUT A WINE LICENCE, Your orders will oblige either direct or through the Wholesale Houses.

Yours obediently,

COLEMAN & CO., LIMITED.

M.B.—The Wine is sold in Bottles, 2/9 and 4/6 each. Trade prices on application.

P.S.—Where the Magistrate's Certificate is not held we are willing to pay the entire cost of a Retail Certificate (the holder of which can sell any kind of Wines) if an assorted order of 6 dozen is sent us of any of our preparations. List on application. Our WINCARNIS,* or Liebig's Extract of Meat and Malt Wine WITHOUT QUININE commands a very large sale, and is recommended by over two thousand medical men who have sent us testimonials in its favour.

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* WINCARNIS is a NEW NAME, registered to prevent fraudulent imitations.

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From the results of my Analyses of various Beef Wines I have had occasion to examine, none have equalled as regards strength, purity of juggedients, and (of no less importance) the skilful and judicions manner in which the respective ingredients have been proportioned and combined, the Liebig's Beef Wine manufactured by Mr. B. Robinson, of Pendleton, Manchester.

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December 15, 1838.

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Duncan, Flockhart & Co.
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Wills & Wootton

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Clarko
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Burroughs, Wellcome & Co.
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Lofthouso & Saftmer
Smith, T. J.
Southall Bros. & Barclay
Woolley, Sons & Uo.
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Elicon & Co.
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AND

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HOME & EXPORT.

Fletchers' Concentrated Liquors

LIQUORS FOR TINCTURES.

T may reasonably be asked, On what grounds do our CONCENTRATED LIQUORS claim to be superior to the ordinary Tinctures of the Pharmacopæia? To this we reply that the method of exhausting a small quantity of a drug with a large volume of spirit is unscientific, slow, and wasteful. It stands to reason that the loss of spirit by evaporation, &c., in making a Tincture must be in direct proportion to the volume of the solvent used. The official method of maceration and pressure, it has been again and again pointed out, is the most inefficient and extravagant that can be devised. Is it not surprising that, whilst the superiority of percolation has been demonstrated beyond possibility of doubt, the compilers of the Pharmacopæia should still cling to processes which are as antiquated as they are wasteful?

By means of the special apparatus which we employ the process of repercolation is carried out in its most perfect form, so that we are enabled to completely exhaust the drug of its active principles, using only the minimum quantity of spirit necessary to hold the latter in solution. It is now generally admitted that, unless made in sufficient quantity to render it profitable to employ a still for recovering the spirit from the marcs, Tinctures cannot be prepared except at considerable loss. The spirit retained by the material, especially if the latter be of a spongy nature—such as squill, for instance—often amounts to from 30 to 50 per cent. of the whole.

The principle which our LIQUORS illustrate has, indeed, been recognised by the authors of the Pharmacopœia in the case of such Tinctures as those of Indian hemp and Nux vomica, which are simply solutions of the respective extracts in rectified spirit. The objections to this particular method are:—(r) The extract used has been submitted to considerable heat, with probable injury to its active principles. (2) It is unnecessary to push the concentration to such an extent as that of a soft extract, which is inconvenient to handle, and does not form a clear solution in spirit. In the manufacture of our Tincture-Liquors no heat whatever is employed, the process being entirely conducted by repercolation. The product obtained is a highly Concentrated Tincture of definite strength, and capable of yielding, on dilution with spirit, a Tincture corresponding in every respect to the requirements of the Pharmacopœia.

From a commercial standpoint, it is of serious import to the pharmacist that he should be able to test his Tinctures for alcoholic strength, as deficiency in this respect is not unlikely to land him in the meshes of the Sale of Food and Drugs Act. The variability of Tinctures, to use no stronger word, is a matter of such frequent observation that it is unnecessary to dwell upon it. The omission of 10 per cent. of rectified spirit reduces the value of a Tincture 3d. It therefore becomes impossible to compare quotations unless the spirit value of two or more samples of Tincture is known to be identical. The Tincture Tables compiled by Mr. F. W. Fletcher, and published in The Chemist and Druggist of January 26, 1889, afford very complete data upon which to form an opinion as to the genuineness or otherwise of a particular sample. These Tables, which have been in use for some time past, are now generally recognised as standards, and their accuracy has been fully confirmed by a large number of analyses in the Government Laboratory at Somerset House.

LIQUORS FOR INFUSIONS.

EFORE the introduction of our Concentrated Liquors it was necessary either to make an infusion of the crude drug on the spur of the moment, or to have recourse to a so-called "Concentrated Infusion" presumably eight times the strength of the fresh preparation. The first alternative necessitated a tedious and troublesome delay, and at best yielded a product variable in strength and inelegant in appearance. The second alternative was not less objectionable. The Concentrated Infusion had most of its virtue boiled out of it, and was little better than a solution of colouring matter in weak spirit. Is it surprising that "Concentrated Infusions" should be held in such low repute when one seeks in vain for any characteristic property in them of the drug they are supposed to represent?

What, then, is the special feature of our CONCENTRATED LIQUORS, and wherein lies the difference between them and the old Concentrated Infusions? In this:—The method of preparing the latter is that of boiling the drug in successive portions of water until exhausted. This weak infusion, or decoction, as it should be more correctly termed, is then evaporated down in open vessels to a low bulk, and finally from 15 to 25 per cent. of spirit added as a preservative. The merest tyro in pharmacy knows well enough that in the extraction of the active principles of vegetable substances prolonged heating is the one thing above all others to be avoided.

It is said that in the course of a debate in the House of Lords on the distress caused by the cotton famine a certain noble duke declared that the poor could obtain an excellent and most nourishing soup at a low cost by boiling down two gallons of water to a quart, to make it strong, and adding thereto a pinch of currie powder. If the duke's theory were sound, there might be some excuse for the method of concentrating an infusion by "boiling it down," but as it is, the final product is likely to have as much value as the duke's soup. It is a maxim in law that there is no wrong without a remedy, and applied to pharmacy the maxim is true-at all events in the present case. The perplexed pharmacist, harassed with troublesome and unsatisfactory fresh infusions, and disgusted with vapid, characterless concentrated infusions, will find in FLETCHERS' CONCENTRATED LIQUORS a relief for which he will give much thanks. FLETCHERS' CONCENTRATED LIQUORS FOR Infusions are prepared by repercolation without heat, the solvent used being that which has been found by actual experiment to be the one best suited to the material operated upon. The result is that the organic constituents of the drug are retained unaltered, and hence an infusion made from our Liquor has all the delicacy of flavour and all the characteristic properties of the original material.

Diluted with distilled water in the proportion of r-20 FLETCHERS' CONCENTRATED LIQUORS yield a clear, brilliant, aromatic infusion exactly corresponding in strength to the B. P. standard—something, in short, which is creditable to the dispenser and agreeable to the patient.

With few exceptions, the price of the Liquors for Infusions does not exceed four shillings per pound (including bottles), which is sufficient to make twenty pounds of infusion at A COST OF LESS THAN ONE PENNY FOR SIX OUNCES!

We can confidently assert that no one who has once used our LIQUORS FOR INFUSIONS will ever think of preparing the latter by any other method.

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The B., W. & Co. products offer you the following advantages:-

- 1. They are prepared with the very best material with the most scrupulous care.
- 2. There is a regular and persistent demand for them, as they are generally preferred to the imitations.
- 3. They afford a reasonable margin of profit.
- 4. Any articles not in demand can be exchanged for those more generally called for.
- 5. They are elegant in appearance and of the best quality only.
- 6. Comparatively they are cheaper than impure drugs: the latter are always most costly in the end.

It will pay you to stock the Kepler Extract of Malt, "Tabloids" of Compressed Drugs, the Kepler Solution of Cod Liver Oil in Extract of Malt, Hazeline, "Lanoline," "Lanoline" Cold Cream. Beef and Iron Wine (this preparation does not require a wine licence), "Lanoline" Pomade, Toilet Lanoline, "Lanoline" Shaving Cream, Veroker Chloride of Ammonium Inhaler, Hypodermic Tabloids.

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Aug [1]

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An excellent agent for the treatment of irritable and sore throat, they impart a clear and silvery tone to the voice, and may be dissolved

In slowly in the month products of whi e inging or this kind, Quapeaking.

lity is of the import-Poor drugs ance. are not likely to produce an increase in your trade for any length of time, neither will cheap imitations of B. W. & Co.'s goods. The genuine products

are supplied at a THE very reasonable **TABLOIDS** price, and yield a good profit on sales.

> Are the most convenient and elegant form for employing this

TABLOIDS OF COMPRESSED CAS-CARA SAGRADA, 2 grs.

terial only.

25 or 100 in bottle at 7/6 and 22/ per doz.



Assorted "Tabloids" in Vinaigrette style (oval bots.) three bots, of each of the following selected "Tabloids"; Pepsin, Quinine, 2 gr., Potash Chlorate, Soda Bicarbonate, Laxative Vegetable, Voice, Cascara Sagrada, Peptonic, Potash Bicarbcuate, Ammoninm Ohloride, Soda-Mint, Ipecac. Comp., in onter case, constituting an effective show case for the connter, 22/6 each.

TABLOIDS OF COMPRESSED SODA MINT

> Are prepared with the purest Soda Bicarb., Ammon. Carb., and Mitcham Oil of

We will co-Peppermint. operate with Chemist who will stock a good line of our products and Lring the same to the notice of medical men in their neighbourhood. We are always happy to supply circular matter, with Ch mist's own name and address, show cards for the window, &c.,

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charge.

TABLOIDS OF COMPRESSED CASCARA SAGRADA EXTRACT 2 grs.

THE

These Tabloids are easily swallowed, do not gripe. The drug is not tasted, and they are a favourite prescription with physicians.

Antacid (Calcinm Carb. Præcip. 3½ gr., Magnes. Carb. 2½ gr., Sodinm Chloride 1 gr.), Vinaigrette style (oval bottles, 25 in each), 4/6 per doz.; 100 in bottle, 12/6 per doz.

Anti-Constipation (Aioin } gr, Belladonna Ext. } gr. Strychnine, 1 gr., Ipecac 1 gr.), Vinaigrette style (oval bottles, 80 in each), 8/6 por doz.

Laxative Vegetable (Res. Podoph., Ext. Hjoscy., Ext. Tarax. an ½ gr., Ext. Coloc. Pulv. 1 gr., Jaiapæ Pulv., Res Leptand., aa ½ gr., Oi. Mentb. Pip.), Vinaigrette style (oval botties 25 in eacb) 7/6 per doz.; 100 in bottle, 18/ per doz.

Voice (Potash, Borax and Cocaine), beantifully graven white metal boxes, bluesilk label, 30 in cach, 8/ per doz.; 80 in each, 16/ per doz.; Vinaigrette style (oval bottles, 30 iu each), 8/6 per doz.

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The most convenient and olegant form for supplying Saccharin. bottles can be corveniently carried iu the pocket.

Peptonic, 3 grs. (Pepsin, Pancreatin, Lacto-Phosphate Lime, equal quantities), Vinaigrette style (oval bottles, 25 in each), 14/ per doz.; 100 in bottle, 48/ per doz. Phenacetin, 5 grs., 25 in bottlo, 20/ per doz.; 100 in bottle, 56/ per doz.

Potass. Chlorate, 5 gr., beautifully graven white metal boxes blue silk label, 40 in each, 4/ per doz.; 100 in each, 7/6 per doz Vinaigrette style (oval hottics), 40 in each, 4/6 per doz.; 100 in hottle, 7/8 per dcz.

Soda-Mint (or Neutralising Tabloids) (Soda Bicarh. 4 grs., Amm on Carb. \(\frac{1}{4}\) gr., Ol. Menth. Pip. \(\frac{1}{4}\) gr.), Vinaigrette style (oval bottles 30 in each), 4/6 per dez.; 100 in bottle, 14/ per dez.

Saccharin, 1 gr., Vinaigrette style (oval bottles, 100 in each), 1/, 7/6 per Vinaigrotto stylo (oval bottles, 200 in each), 14/ per doz.

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Extract from the Proceedings of the Royal Society of Edinburgh:—"Experiments on the Chief Disinfectants of Commerce, with a view of ascertaining their power of destroying the spores of the 'Anthrax Bacillus,' by a Medical Officer of Ealth and Public Analyst. A 10 per cent. solution of Liquer Oarbonis Detergens, acting for four hours, distinctly retarded growth of Anthrax, for the spores, whether in Ogelatin-pork or in the broth, did not commence developing for 24 hours. Undiluted Liquer 'Carbonis Detergens,' acting for four hours, arrested future growth."

The Practitioner of September, 1881:—"Eczema connected with varicese veins of the leg—also Pruritus Scroti, Labiorum, and Ani—is best relieved by weak tarry lotions, one of the best of which is Wright's Liquer Carbonis Detergens, and Retail. throughout Great

and Retail, throughout Great

P. McLeod, Colonel R.A., Inspector-General of Ordnance, Ordnance Office Madras, writes Sept. 10,1887:—"I can certify that 'Liquor Carbonis Detergent, has cured me of a Psoriasis of 21 years, incurred in Burmah, after every effort of such an ableskin doctoral Sir Krasmus Wilson had failed."

From the Lancet, Dec. 22, 1886:—"In our hands it has been a most effective agent in skin diseases, especially of the chronic exematous class, and one class of psoriasis which had resisted all other kinds of treatment speedily get well under the application of the Liquor Carbonis Detergens. We esteem it a very valuable addition to our list of skin remedies." application of the Liquor Carbonis Detergens. We esteem it a very valuable addition to our list of skin remedies."

In chronic eczema."

From the British Medical Journal, Sept. 2.

1871:—"We have tested it, and can affirm its value as a detergent agent. We consider the Liquor is an article of great utility."

From the Medical Times and Gazette Jan. 19, 1867:—"We have more than once called attention to the value oft his remedy in chronic accesses."

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SUMMARY.

THE drug sales on Thursday were heavy, and buying was fairly active. The prominent feature was a considerable advance in Tinnevelly senna.

SEVERAL novelties are described in this issue, including a miscible fluid extract of cascara sagrada, introduced by Messrs. John Moss & Co., and the Berkefeld filter, the material of which is kieselgular.

MR. COMMISSIONER KERR has ruled that brokers selling caustic acid and sending it through London for delivery to a customer cannot be held responsible for damage done to a carman employed by the carriers, in consequence of defective packing.

THE introduction of the microscope in the Minor examination renders it necessary that pharmaceutical students should be practically acquainted with this instrument, and to aid in this Mr. John Humpbrey communicates a well-illustrated article to this issue.

In a Pharmacy Act case tried at Southend last week the defendant's counsel tried to convince Judge Abdy that Battle's vermin-killer was a patent medicine, and that as such its sale was not prohibited to unqualified dealers. The defence failed.

THE Glasgow Sheriff has given a judgment in favour of the defence in the coppered-peas case, which we have rather fully reported. The Sheriff's analysis of the scientific evidence is a valuable summary of the present position of knowledge in reference to the poisonous character of copper salts. His judgment is to be appealed against.

THE Veterinary Department of the Board of Agriculture have reported a series of experiments undertaken with a view to ascertain whether Koch's tuberculin could be relied upon to detect tuberculosis in animals. The report disproves the alleged property of tuberculin of raising the temperature in the case of tuberculous animals specially. It has at least as much effect on non-tuberculous animals.

CORRESPONDENCE this week is closely limited by exigencies of space. We are obliged to hold over a large number of replies to queries, but will try to catch up arrears next week. Interesting letters appear on the coppered-peas case from Professor Glaister, on Donovan's syrnp of cinchona from two well-known pharmacists, and some comments on our recent report of the Mitcham flower-harvest, from which it appears that the waste waters are to be bought.

A LARGE section of this issue is devoted to matters of educational interest, the departments of pharmacy, medicine, science, dentistry, veterinary practice, and agriculture being represented in a carefully-collated description of examination regulations, and the educational facilities offered by schools, colleges, and universities. We add to this advice to those entering any of the professions, and give some notes on the honours and appointments which are open for competition. Information is also given regarding pharmaceutical qualification in our colonies, the United States, France, and Germany.

AT THE COUNTER.

CORRESPONDENTS continue to send us packages of orders they have received and treasured. The only specimens we can spare space for are those in which there is really something original.

We can but sympathise with the lady at the laundry who sends to a Stratford chemist (Stratford, London, not the Avon town) an order for 1d. worth of "Asthaphetitus for croup for fowls." That lady must have studied Greek in her younger days. "Paragot and syrup of squarils" and variations of hicra picra, ipecacuanha, "oil of armens," and such like make up the rest of the collection sent from that quarter. "Cough mixqure," in the same parcel, may be regarded as ingenious.

The best in a parcel from Dartmouth is "1d. melaudeum for cleyning claus," and the following recipe:—

3d. Pennyworth of Balsam Prives

2d. Sweet uitre

ld. Red Lavendar

1d. Racjal Powder

1d. Esperiment

[The last two are apparently curious misapprehensions of

the terms Bac. Cub. and Ess. Peppermint.]

A small selection from the Isle of Man hardly suffices to enable us to judge what language is spoken in that gem of the sea. "Peneth peperment loshers" has a touch of Hebrew about it: "antiboils pills" suggests the Irish accent. But as we believe it is well established by the Earl of Radnor's latter days in old Erin, there is nothing wonderful in the association of the two languages. "Matlated spirit" might occur anywhere, but "N. Statchum" for nasturtium see ds must be genuine native Manx.



CONDUCTED BY RICHARD J. MOSS, F.C.S., F.I.O.

QUALITATIVE ANALYSIS.

THE powder to be distributed for the next exercise in qualitative analysis will be a mixture of three salts. It is to be submitted to a thorough systematic examination; its constituents are to be detected, and all other substances proved absent.

Students' applications for portions of the powder will he received up to Wednesday, 23rd instant, and the samples will be forwarded immediately.

Students' reports will be received np to Saturday, October 10.

REPORTS.

The mixture of salts distributed for analysis last month contained 3 parts of ammonium alum, 1 part of copper sulphate, and 1 part of magnesium sulphate. The calculated composition of this mixture was:—

• •	• •		• •	• •	 5.08
	• •	••			 3.64
• •					 1.95
••					 2.78
	• •	••		••	 40.91
					 46·C4
	••	•• ••			 · · · · · · · · · · · · · · · · · · ·

100.00

In this case the metallic radicles were present in small quantity: they constituted only about one-eighth of the mixture, the greater part of it consisting of water and the sulphnric radicle.

We distributed forty-eight samples, and there were twentysix reports sent in; fifteen students failed to detect magnesium, twelve failed to detect ammonium, and aluminium was not detected by seven. The other constituents were detected by all our correspondents.

Although the mixture contained less than 2 per cent. of metallic magnesium, a magnesium salt was present to the extent of 20 per cent -quite a considerable quantity. The failnre to detect magnesium was due, in nearly every case, to one cause—sufficient time was not allowed for the formation of the crystalline precipitate of ammonio-magnesium phosphate. Some precipitates appear instantly; in this analysis, for example, when ammonium hydrate was added to the solution from which copper had been separated, there was an immediate precipitation of aluminium hydrate; there was no preceptible interval of time between the addition of the reagent in excess and the formation of the precipitate. The precipitate, too, was light and flocculent, presenting no crystalline structure, and very little of it sufficed to interfere with the transparency of the liquid. The precipitate would have appeared just as quickly had the quantity of aluminium heen much smaller. The case of magnesium was very different. Ammonio-magnesium phosphate is a crystalline body, and in the growth of crystals time is an important element. The length of time required depends upon the concentration of the solution, the proportion of the reagent present, the proportion of ammonia, and of its salts. In the course of an analysis, conditions such as these are not altogether under control; accordingly, the only safe plan is to allow ample time to clapse hefore arriving at the conclusion that magnesium is absent.

The proportion of ammonium in the mixture may appear small, but it represents 20 per cent. of a salt of ammonium, a quantity far too large to afford any excuse for its non-detection. The method employed is often a very rough one, suited only for the detection of large quantities. To add a caustic alkali, boil the solution, and observe whether there is any smell of ammonia will do very well if the object is to ascertain whether ammonium is present in large quantity; but in dealing with small quantities, such as are likely tooccur in a mix'nrc of several salts, such a method is not trustworthy. The hest plan is to employ an insoluble alkali such as calcium hydrate, as the reagent, place a little in a watch glass, and add some of the dry powder under examination, then moisten the mixture very slightly with water, and instantly cover the watch-glass with a glass plate to the under-side of which a small piece of moistened turmeric or litmus-paper adheres. If the test-paper does not change colour in a few minutes a gentle heat may be applied, and if this fails to cause an evolution of ammonia it may safely he inferred that no ordinary ammonium compound is present.

PRIZES.

The First Prize for the hest analysis has been awarded to H. FERGUSON, care of Messes. Sampson & Baifoot, Chesterfield.

The Second Prize has been awarded to

A. MELDRUM, 58 George Street, Edinburgh.

Marks Awarded for Analyses:

H. Ferguson (1s	t prize	e)		100	A.G.S				80
A. Meldrum (2n	d priz	e)		98	Sapientia				73
A. Blowpipe				95	R.J. Matthews				75
W. J. Brewer	• •	• •		9)	Styrax				73
W. P				90	Chemicus		••		72
H. Ci.				89	J. E. Schofield				70
Filins Agricolæ				83	J. A		••		63
W. R				87	J. Hamerton				65
A. E	• •			85	Barinm		••	• •	6)
В. Т.	• •	••	• •	85	W. Tnomson	• •			60
Teuton				83	Pepsine		• •		55
W. Hood		• •		82	Patiens				55
Joseph Rose		• •	• •	٤1	H.G.F				103

TO CORRESPONDENTS.

Prizes.—The students to whom prizes are awarded are requested to write at once to the Publisher, naming the book they select, and stating how they wish it forwarded.

Any scientific book that is published at a price not greatly exceeding half a guinea may be taken as a first prize.

Any scientific book which is sold for about five shillings may be taken as second prize.

Note.—All communications should include the names and addresses of the writers.

A. BLOWPIEE.—You found ammonium in the preliminary examination, and afterwards by a special test, but it was not included in your list of constituents detected.

W. J. BREWER.—You omitted to state your reasons for concluding that acetic acid was evolved when the powder was heated alone and with sniphuric acid, and you did not describe any reaction which would have proved an acetate to be present.

W. P. You ought to have had no doubt about the presence of ammonium, the results you obtained could only be due to that compound.

H. Ct.—The change in column that you observed on heating the powder was not in the 1 ast like that due to carbonisation, and the odonr evolved here no resemblance to the hurnt sugar smell that accompanies the carbonisation of a tartrate.

FILUS AGUICOLE.—The absence of a precipitate immediately on the application of the sodium phosphate test for magnesium indicated only that there was no considerable quantity of magnesium present. Before concluding that magnesium was absent you should have allowed an hour at least to clapse. It is well to recerd the time allowed in your notes,

W. R. Applications for portions of the powder for analysis should always be sent in separately at the proper time.

A.E.—The solution to which you added sodium phosphate must have been extremely dilute if it falled to give a precipitate after the lapse of say, five minutes.

TEUTON.—A separate and distinct test should always be applied for ammoulum; it may readily escape detection in the preliminary examination if not present in large quantity.

W. Hoop.—You overlooked aumonium altogether: it ought to have been proved either orescut or absent.

JOSEPH ROSE.—The most probable explanation of your supposed detection of zine is that you did not employ coough ammonlum hydrate to precipitate all the aluminium, and when you added the sulphide afterwards the remainder of the aluminium was thrown down as hydrate.

A. G. S.—It is remarkable that you failed to detect magnesium after concentrating the solution by evaporation. We had no difficulty in detecting the magnesium in a 5-per-cent, solution of the powder, and without concentration. The crystalline precipitate of ammonio-magnesium phosphate was very noticeable in one minute.

R. J. MATTHEWS.—You omitted to mention the colour of the precipitate thrown down hy ammonium hydrate; this is always an important point. If It had consisted of ferric hydrate alone, as you supposed, it would have been a dark reddish hrowo, whereas it was almost colourless.

STYRAX.—The odour you mention, and which might, perhaps, he better described as an irritating sensation, was due to sulphuric-acid vapour. When the copper was completely removed, ammonium hydrate threw down a nearly colourless precipitate of aluminium hydrate.

CHEMICUS.—You omitted to examine the mixture for ammonium. The precipitate you obtained with calcium chloride consisted of calcium sulphate.

J. E. SCHOFIELD.—Some of the reactions which led you to cooclude that hismuth was present were very clear and conclusive, according to your account, but it is quite impossible that the reactions could have taken place, unless you added hismuth to the mixture in some way. In testing for ammonium, the thrmeric, or litmus-paper, should not be gnmmed to the cover glass; it should be moistened with enough water to make it adhere.

J. HAMERTON.—As you obtained no precipitate with ammonium hydrate, it must be assumed that you did not employ enough of the reagent to neutralise the acid of the solution; until this was done, no permanent precipitate of aluminium hydrate could be formed.

BARIUM.—You can easily prepare a similar mixture of salts, and it will repay you for the trouble to repeat your work with such a mixture.

W. THOMPSON.—Quantitative results are not required; the calculated composition of the mixture is given above for the information of students who may wish to learn the quantities with which they had to deal.

PEPSINE.—See remarks to W. Thompson.

PATIENS.—You did not precipitate the copper completely as sulphide, and it appeared later on in the analysis.

English Rews.

BIRMINGHAM WATER-SUPPLY.—Mr. Thomas Barclay's lecture, of which a brief report appeared in these columns last week, has been published by Cornish Bros., of Birmingham, in pamphlet form, at 6d. It contains a selection of the views exhibited by Mr. Barclay. We notice that the lecture has been commented upon by the metropolitan and provincial press during the week.

Not Enough.—John Mason, a Preston youth, who thought life not worth living, went to Mr. Watkinson, chemist, Brook Street, Preston, on Tuesday morning, for a pennyworth of laudanum, and afterwards sent a lad to the shop for an additional twopennyworth, but it was refused. John had to content himself with the pennyworth, which he swallowed when he got home, at the same time telling his mother. He was relieved of the dose by means of the infirmary stomach pump, and is none the worse now.

SWEATING SOVEREIGNS.—Professor Attfield was called in snpport of a charge against a man named Garland at the Central Criminal Conrt on Tuesday. Accused had passed three light sovereigns. Professor Attfield said they had been sweated to the extent of about 2s. 6d. each. Cross-examined by Mr. Gill, the professor said the chemicals found in the prisoner's room were such as were used by jewellers for cleaning jewellery, and would be useless for extracting gold, except with a galvanic battery. There was no evidence that the prisoner had ever possessed a battery, and he was acquitted.

CHEMICAL-WORKERS' DANGERS.—The body of a man, named Jos. Arnott, of Pocket Nook Street, was found on Monday afternoon lying behind M'Bryde's chemical-works, St. Helens. He was employed at the Globe Chemical-works and had left his work at ten that morning, complaining of being "gassed."—Last week two men were severely burned in the chemical-works of Messrs. Joseph Townsend (Limite 1). Crawford Street, Port Dundas. They had been repairing a decomposing pan, containing borax liquid, when the splice which they were fitting on gave way and the liquid came pouring out upon them.

CHEMISTS' ASSISTANTS IN TROUBLE.—Distin Webber, the chemist's assistant who was charged at Bath last week with attempting to steal money from the till of an inn at Bathampton, appeared on remand on Saturday last. A relative promised that he should be sent to Australia, and asked the bench to deal leniently with him. Fined 40s., or a fortnight's imprisonment. — William Cooper, described as druggist's warehouseman, was sentenced at the Central Criminal Court, on Thesday, to twelve months' imprisonment, with hard labour, for stealing bracelets and other property from the South Kensington Mnsenm.

PAUPERS AND CHLORODYNE.—At the last meeting of the Worksop Board of Guardians some remarks were made on a recent increase in the salary of the medical officer, which had been sanctioned. Mr. Garside said that the proposal to allow him to purchase the drugs would be hard on the old people. A large proportion of the drugs used was chlorodyne, which was, to a great extent, a necessity for the old people. Now that Dr Fleming had to find the drugs, he would probably let them bave as little as possible of it. The chairman said the matter had occurred to him in the same light, and he did not approve of the change. The matter then dropped.

DETERMINED TO DIE.—Mrs. Julia Thompson, Sonthsea, the wife of a leading stoker, R.N., died from salt-of-lemon poisoning last week. She often threatened to poison herself, and one of the witnesses at the inquest stated that she asked her for some prissic acid on the Monday afternoon. Deceased then went to Mr. Wheeler, chemist, and asked for salts of lemon, but the witness told Mr. Wheeler not to supply it, and she was not served. Afterwards, however, deceased eluded her, and at the inquest Albert Hansford, assistant to Mr. Timothy White, chemist, of Palmerston Road, stated that be sold twopennyworth of salts of lemon to the deceased on Monday evening, and again at nine o'clock the following morning. This, Dr. Sparrow said, was the cause of death

THE COUNTY COUNCIL CHEMIST AND THE GAS.—At Tuesday's meeting of the St. Luke's (Middlesex) Vestry—Mr. Chnrchwarden Griffin in the chair—the clerk read a letter from the chemist to the London Country Council asking particulars relative to the price paid for the public gas; whether meters are employed; where the meters are placed; what quantity the burners in the lamps are supposed to contime, &c. This, added the chemist, was solely for official purposes, and not for republication. Mr. Hewlett moved that the inquisitorial letter be received. Mr. Moreland: Oh, no; it is information which we cannot refnse. Mr. Conrchwarden Easterling: As the application comes from the chemist, we had better refer it to the doctor. (Laughter.) The application was ordered to be complied with.

STEALING FIREWORKS.—Six boys were charged at the Gorton Police Court, Manchester, on September 10, with stealing from the lock-up shop of Mr. Dale, who carries on business as a chemist and druggist at 262 Gorton Lane, a quantity of fireworks and other articles, valued at 21. 10s. On September 3 Mr. Dale was removing to other premises, and left a number of articles in the shop at Gorton Lane. On September 5 he went there and found that the place had been broken into and ransacked. None of the missing things had been found, with the exception of a knife. The prisoners admitted their guilt. The magistrate sentences the ringleader, who had been previously convicted, to six weeks' imprisonment with hard labour, and ordered the other boys to be birched.

DISEASE OR MEDICINE?—An inquest was held at Sheffield on Monday respecting the death of a woman named

Garrett, aged 58. She was attended by Dr. Shean, who found her suffering from English cholera. He sent her some medicine, and gave directions to the woman's daughter as to the dose, &2. These were followed, but the doctor, calling in the evening, stoppod the medicine, and told the daughter her mother must not be allowed to go to sleep Other medical men were called to testify that the treatment adopted was correct, and that after death the only signs of its cause discoverable were that the intestines were inflamed and the heart was weak. The coroner said on the ovidence they could not find that the doctor had given too much morphia, and the jury returned a verdict that the woman died from coma after the administration of morphia.

FATAL USE OF CHLOROFORM FOR TOOTHACHE.—An inquest was held on September 9 at Stourport with reference to the death of Charles Edward Cadogan Masterman, aged sixteen, second son of Dr. Masterman. The youth, who was home for his holidays, had been suffering from toothache. On Sunday morning he went to church, and afterwards had dinner with the family, hut afterwards was missing, and his hrother found the door of bis room locked. Dr. Masterman, forcing the door open, found deceased lying on the floor dead, with a bath-towel wrapped round the lower portion of his face, and a strong smell of chloroform pervaded the room. Deceased had heen in the habit of using chloroform in the study of natural history, and no donbt used it to allay the pain from his tooth. The jury returned a verdict of "Death from misadventure."

SUICIDE OF A NEWCASTLE CHEMIST.-Mr. Frederick Phipp, a chemist at 114 Westgate Road, Newcastle-on-Tyne, living at Bath Lane Terrace, complained to his landlady on Sunday night of feeling unwell, and requested her to go for a doctor. He, however, quickly changed his mind, and said he would go for one himself. Whether he did so or not is unknown. The next morning, ahout 8 o'clock, his laudlady knocked at bis door to announce the time, but receiving no answer, she opened the door, and perceiving blood-stains on the hed, she hurriedly proceeded to awaken another inmate of the house, and requested him to enter Mr. Phipp's room. He did so, and then discovered the unfortunate man lying with his face on the pillow and a razor marked with blood close to his right hand, which was under the counterpane. The police were informed, and the coroner's officer proceeded to the place. It was found that the deceased's throat was cut and that life was extinct. The deceased was ahout 35 years of age and a native of Bedfordshire. He was unmarried. Of a quiet, unobtrusive manner, he was noticed lately to he more than ordinarily quiet, having hardly a word to say to anyone. He was, however, held in high respect among those who had the pleasure of his acquaintance. An inquest was held the same evening, when the jury found that deceased bad committed suicide while in a despondent state of mind.

FIRES.—A serious fire occurred on Saturday evening, on the premises of Messrs. Ayrton & Saunders, wbolesale drnggists and chemists, 149 and 151 Duke Street, Liverpool. The fire originated in the perfumery-mannfacturing room, and an hour elapsed before the flames, which rapidly extended, were snppressed. The considerable damage which was done is wholly covered by insurance. Superintendent M'William, of the fire-brigade, and Chief-officer Rolt, of the salvage corps, were standing on the top floor when the roof gave way. By great luck they escaped all injury save a few scratches about the face. [Messrs. Ayrton & Saunders write to say that by the efforts of the firemen the flames were confined to the perfumery manufacturing rooms. The general stock of sundrics was not injured, and the fire will not interfere with the usual promptitude with which orders will be despatched.]—A fire occurred a week ago at Missenden, Bucks, on the premises occupied by Mr. W. Baker, chemist, dentist, and V.S. The fire originated by Mrs. Baker taking a howl containing some chemicals which were heing made into ointment into the shop, and exposure to the air setting them alight. The flames flared up into her face, and she dropped the howl, and tho hlazing ointment ran over the shop-floor, and set fire to some turpentine and oil, some falling on Mrs. Baker's dress, and before it could be put out her legs were burnt. The stock is insured in the Alliance Office, but the insurances will not

cover half tho loss, which, Mr. Baker estimates, at the lowest, is 700%. The owner of the property, Mr. G. Coles, is insured in the County Office.—A serious fire occurred at the Greenbank Alkali-works, St. Helens, helonging to the United Alkali Company, on September 11. A large iron tank, containing forty or fifty barrels of tar, which was heing boiled for the tarring of pipes used in certain chemical processes, suddenly burst into flame. It was found impossible to extinguish the hurning tar, which blazed fiercely for several hours, and the efforts of the brigade were directed towards preventing the destruction of the engine-house. This object was attained, though the roof of the huilding was considerably damaged. The total loss is estimated at ahout 200%, and it is covered by insurance.

IRISH NEWS.

THE CHAIR OF CHEMISTRY in Queen's College, Cork, has become vacant by the retirement therefrom of Professor Simpson.

FLY CEMETERIES are being vended in Duhlin by an original who thus cries: "Blue hottles and flies—catch 'em alive! They wag their tails and wink their eyes. Ob, catch that nasty dirty fly!"

A TURBULENT CUSTOMER.—Last week at the Athy Petty Sessions, a man named Mnrray was fined for disorderly conduct in Messrs. Stirling's drug store. The prisoner, who had to he ejected from the premises with force, endeavoured to organise a fistic encounter with the assistant.

FIREMEN.—A sum of 358l. has been collected by public subscription on bebalf of the relatives of the fire-brigade men, Doberty and Burke, who were killed while endeavouring to save life during the recent fire at Messrs. Grabam's State Pharmacy, Westmorland Street, Doblin.

DRUG-CONTRACTS are invited by Callan Union, September 21; Cavan Union, September 22; Dingle Union, September 24; Enniskillen Union, September 22; Gort Workhouse, September 26; Cork Union, September 21. In all free delivery, no charge for empties, sureties, and standard quality of drngs, are points to be observed by the contractors.

SEQUAH is about to revisit Dublin after an absence of three years. The following announcement of marriage is from the *Limerick Chronicle*, September 10, 1891:—

Snow ("Sequah") and Nono—On Saturday, 5th September, at the Roman Catholic Cathedral, Ennis, hy the Rev. P. M. O'Kelly, C.C., Alfred Wilson Hartley Snow ("Dr. Sequah"), late of Chicago, U.S.A., to Marie Marguerite, fourth danghter of Professor Nono, Ennis. No cards.

PHARMACEUTICAL OPENINGS .- At the weekly meeting of the Londonderry Dispensing Committee, Dr. Davis gave notice that on September 26 he would move: "That it would be an advantageous and economical arrangement to have a compounder appointed for the two city dispensaries, and that the necessary steps should be taken to appoint a chemist at a reasonable salary without delay."—On Tuesday last an election for a compounder to the South Dublin Dispensary district was held at Peter Street. There were six candidates for the vacant post, and, after three rounds of voting, Mr. William Richard Oliver Barker, Licentiate of the Apothecaries' Hall, Memher of the Pharmaceutical Society of Ireland, and Licentiate of the Rotuuda Hospital, was elected. The other candidates were Messrs. Madders, apothecary, and Bernard, Lemon, O'Callaghan, and Thomson, all pharmaceutical chemists. On September 21, the Belfast Dispensary Committee will appoint a compounder for the Romford Street district at the salary of 1501. per annum. The person appointed will not, however, he allowed to engago in the drug-trade nor will he be permitted to take any part in the sale of medicines.

CONTRACT MEDICINES.—At last week's meeting of the Donegal Poor Law Board a letter was read from the Local Government Board, dated September 4, 1891, referring to a report received from Sir Charles Cameron respecting the drug recently sent to him for examination. The Board pointed out that in the case of the oue sample of tincture, which

they themselves had selected, the report showed that the contractor had not supplied an article in conformity with the standard prescribed by the British Pharmacopæia. The Board observed that the Guardians had made no order respecting the result of the analysis, and, having regard to the facts disclosed in reference to the samples which had been previously submitted to Professor Lapper, in which all the preparations examined were of inferior quality, the Board requested to be informed what steps the Guardians proposed to take against the contractor under the provisions of the Sale of Food and Drugs Act.

SCOTCH NEWS.

MR. D. MCLAREN, Clerk Street, Edinburgh, has disposed of his branch business in Parson's Green to Mr. Dick, a former assistant in the shop.

Mr. R. W. Dunn has opened a nice-looking shop in the western end of Dalry Road, Edinburgh.

LABELLING.—A correspondent of the Glasgow Herald relates that his wife went to a well-known drug-shop in the city for some sugar of milk. The chemist supplied her with a package, but, instead of sticking a label on the package indicating the contents, simply loosely stuck the label in at the fold, where it could easily drop out. This did, in fact, happen; fortunately, the writer says, he picked it up, and found that the chemist had given not sugar of milk but sugar of lead, probably having mistaken what she asked for.

CHARGE AGAINST A CHEMISTS' PORTER. — James Gallacher, twenty years of age, a porter in the employment of Mr. John Cummock, manufacturing chemist, Glasgow, has been arrested on a charge of causing the death of a fisherman named Kennedy. The latter had been annoying two girls on their road home, and they appealed to Gallacher for protection. He consented to see them home, and, as Kennedy persisted in addressing the girls, Gallacher, it is alleged, turned sharply round and struck or pushed him. Kennedy fell, and did not rise again. He was found a few minutes later insensible and bleeding from the nose. He was taken to the Royal Infirmary, where he died next morning from loss of blood.

FRENCH PHARMACEUTICAL NEWS.

(From our Paris Correspondent.)

CONGRESS OF CO-OPERATIVE SOCIETIES.—The sixth International Congress of Co-operative Societies was commenced last Sunday at the Trocadero. Various foreign delegates were present, including several from England. At the opening meeting the President of the Congress, after tracing the history of co-operative societies in France, held up those of England as examples of complete success. He apparently thought a good deal of the fact that the societies in this country had ventured on the purchase between them of 2 tons of such a marketable commodity as soap.

LEAD-POISONING.—The Hygienic Council of the Seine has remarked the frequency of deaths from lead-poisoning amongst workmen employed in handling this metal and its products. In consequence the Council has requested the Prefect of Police to enforce strictly the regulations already passed in the interest of leadworkers. The Council has likewise demanded the prohibition of the sale of glass bulbs filled with hydrosulphide of ammonia. Stupid practical jokers delight in throwing these down in a crowded street to the annoyance and injury of the passers-by.

Poisoned Snails.—M. Boisdart, Passage Dalberg, Paris, partook somewhat freely one day last week of that favourite Parisian delicacy, snails, and was seized by a violent colic. The medical man who was instantly summoned detected symptoms of poisoning and administered an antidoto, but without success. The body of M. Boisdart was conveyed to the Morgue, where a post-mortem examination will be made. Imitation snails are manufactured here from calves' lights,

&c., not always perfectly fresh, and it is anticipated that the unfortunate man partook of these spurious articles mixed with some foreign ingredient and thus met his death.

FIRES.—A fire was caused by spontaneous combustion of inflammable gases at the French Chemical Company's Works, Argenteuil, last Thursday. The damage done is extensive, but is covered by insurance.—On Friday night an alarming fire broke out at 10 o'clock at Blanchard's alcohol distillery, Rochefort. During the whole night it was feared that the adjacent quarters of the town might be attacked or the vessels at anchor in the harbour set alight by the streams of flaming liquid running down the river. Five hours' continued effort on the part of the population and troops avoided that danger; the flames were finally stifled with sand and earth. The losses are covered by insurance.

Notes of Nobelties.

MISCIBLE CASCARA SAGRADA.

MESSRS. JOHN MOSS & Co., of Galen Works, Deptford, have followed up Mr. Moss's recent researches on the composition of cascara sagrada, and the principles upon which galenical preparations of the drug should be manufactured, with a new liquid extract, the peculiarity of which is that it mixes with water to make a clear solution, or practically so, for we can just detect a slight opalescence. This is a good advance upon the muddiness which characterises a mixture of the B.P. extract with water. The new preparation is not tasteless; it possesses a distinctly bitter taste, but the nauseous taste of cascara sagrada is not there, and no alkali is used in making it. As far as we have been able to judge, the laxative properties of the drug are fully represented in the preparation. "We claim," write the firm, "that the result is due to our intimate knowledge of the bark, acquired through numerous and prolonged experiments, and that we possess a close knowledge of the conditions under which the miscible fluid extract can always be prepared." In other words, this is a branch of pharmacy which they have specialised to good purpose.

TAP-REGULATOR FEEDING-BOTTLE.

This is an article manufactured by Mr. George Scriven, Brierley Hill. The teat-and-tube union is in this case a tap, which can be turned to give a greater or less supply of food to the infant, and when the bottle is empty, or the infant has had



enough, the tap may be closed, thus providing the child with an efficient "comforter" and without disturbing it The bottles are made to sell at popular prices (the cheapest $4\frac{1}{2}d$.), and the 1s. one has a bent white glass bottle, black

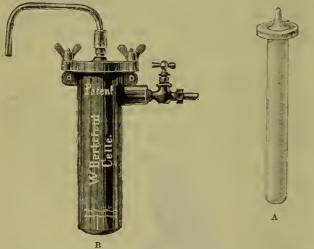
rubber fittings, vulcanito tap, and brushes, all neatly hoxed. In the cheaper bottles the tap is made of pure tin. As a novolty, and for its own merit, the bottle is worth introduction.

HALF-MINUTE CLINICAL THERMOMETER.

MESSRS. HUDBON & CO, mannfacturers of thermometers, 5 Crosby Square, E.C., bring under our notice tho new clinical thermometer, which they are introducing under the above title. Its special merit is that it registers the temperature in the minimum of time, and we have had no difficulty in corroborating their statement, for on several trials the temperature of a healthy person has been noted within the thirty seconds claimed by the makers, and longer exposures made no difference on the record. We may also note that the thermometer is graduated to 02° F., and that the price is moderate.

NORDIMEYER-BERKEFELD FILTER.

In our report of the Hygienic Congress we mentioned that one of the exhibits which attracted attention was the Nordtmeyer-Berkefeld water filter, upon which a paper was read in one of the sections. The Berkefeld Filter Company, 70 Mark Lane, E.C., has taken up the filter in this country, and one of our staff had an opportunity of inspecting it the other day. The filter is, we understand, the outcome of a long series of experiments hy Mr. W. Berkefeld, of Celle, who is proprietor of the Kieselgnhr mines near Luneburg. This gentleman had noticed how pure the water is which filters through the mines, although the water of the district was very yellow, and his object was to do the same thing on a small seale. He has succeeded in converting the Kieselguhr into a solid material like biscuit porcelain, and this is fashioned into tunes of appropriate size (A)



To anyone who has microscopically examined the silicions skeletons of the diatoms which make up Kieselguhr it is conceivable that in mass no better filtering medium could he obtained, since the porosities of the diatoms are incredibly minute. Indeed the fact that the Berkefeld filter is nsed in King's College hacteriological department for sterilising water (in preference to hoiling it) is proof that physically the filtering material is perfect. It will be noticed that the Chamberland principle is adopted; the medinm is a hollow cylinder closed at one end and haked at the temperature of the electric arc, wherehy any organic matter which may remain in the Kieselguhr is perfectly destroyed. The size of the cylinders is generally 10 inches in length by 2 inches external diameter and 1_1^4 inch hore, thus giving a filtering surface of nearly half a

square foot. A filter of this size delivers from a pint to half a gallon of filtered water per minute according to the water pressure, but of conrso considerably less without pressure. A form much used for water-filtering is shown in B. Here the ridge of the cylinder rests on the top of an enamelled iron case, so that the water passes from the ontside of the filter cylinder to the inside upwards, and then through the supply-tap But there are many other forms of the filter, such as the ordinary table-filter, with the usual reserveir or a deep narrow glass cylinder. As far as our observation goes, the action of the filter is simple and satisfactory, especially in removing suspended matter from water which cannot he filtered out hy ordinary means. Thus, the Mont Dore liotel, Bournemouth, has a well which yields a good supply of faintly-opalescent water, which, in the course of a day, deposits a precipitate of finely-divided ferric hydroxide. Various means were tried to clear it, and it was felt that precipitation as well as filtration would he necessary, hnt the Kieselguhr filter managed to do the thing nicely. Of course, after using a filter for such a water for a day, the outside of the cylinder has to he hrnshed; but this can he done within a minute, and the cylinder is as good as new again; or it may be hoiled when it has been used for filtering microhic liquids. The filter is well adapted for pharmaceutical purposes—but this we reserve for another occasion.

MARRIAGES.

[Notices of Marriages and Deaths are inserted free if sent with proper authentication.]

KEEN—MERRELL—On September 12, at Holloway Congregational Church, by the Rev. Mark Wilks, Frederick Gray, son of Henry Keen, of Cathcart Hill, to Beatrice, daughter of the late James Merrell, pharmacentical chemist, of Camden Road, London, N.W.

UNDERWOOD—LITTLEY.—On September 10, at the Congregational Church, Weston-super-Mare, Mr. George Underwood, chemist and druggist, Weston-super-Mare, to Nelly, daughter of Mr. John Littley, of Baymead, Weston-super-Mare.

POISONED BY WEED-KILLER.—Two more deaths from weed-killer have occurred this week. In a case at Teignmouth the deceased was a child named Milton, aged 9 years, who drank from a watering-can which a gardener in the employment of a firm of nurserymen was using, and in which was a gallon of the deadly stuff. At Cirencester a little hoy, aged 2 years, the son of the superintendent of the cemetery, sucked from an empty cup which had contained the poison, and died.

The German Apotheker Verein.—The twentieth annual gathering of the German Apotheker Verein takes place at Magdehurg this week. The following was the official programme:—Monday, September 14, at 10 A M., meeting of the executive at the "Magdehurger Hof." In the evening reception at the "Magdehurger Hof." Tuesday, at 9 A.M., first general meeting of the conference, ladies' excursion through the city. At 6 P.M "jovial evening" in the "Wilhelma," at the invitation of the Magdeburg pharmacists. Wednesday, at 9 A.M., second conference meeting, at the "Magdeburger Hof," ladies' carriage excursion to the town park, at 4 P.M. dinner in the "Freundschaft" hall, to be followed by music and dancing. Thursday, at 9.30 A.M., excursion hy special train to Bnckan, inspection of Gruson's engineering-works and of the conservatories of Herr Geheimer Commerzienrath Gruson, from 1 to 3 P.M. informal dinner in the Wilhelmsgarten, at 3 P.M. steamer excursion to the Herrenkrug; muslcal evening and supper at the Herrenkrug, returning hy steamer to Magdehurg. Frlday, in case of sufficient participation, an excursion by special train to Thale. The fee for admission to the conference and its attendant pleasures was 15s for a gentleman and 10s for a lady.

Personalities.

MR. JAMES BALFOUR ADAM has been appointed manager of Daniel Judson & Son (Limited).

THE ASHFORD LICENSING JUSTICES have granted a wine licence to Mr. J. Ingall, chemist, of Ashford.

Mr. J. BOOTH, chemist, of 7 Norfolk Terrace, Sidcup, has relinquished the husiness to Mr. Cresswell, of Lee, who has put Mr. W. Smith in the shop as manager.

MR. J. J. HOWITT, late Workhouso Master at Newcastleon-Tyne, has been appointed manager of Messrs. Bowman, Thompson & Co.'s (Limited) Chemical Works, Northwich.

MR. ROBERT HAMPSON, treasnrer of the Pharmaceutical Society, is to deliver the address and present the prizes at the opening of the Sheffield School of Pharmacy on October 19.

COUNCILLOR BARCLAY has started for America, whither he goes to represent the Wesleyan Methodists of Birmingham at the Wesleyan Œonmenical Conference, to be held in Washington in October.

In the Sunday at Home for September there is an interesting notice of the Rev. William Tyler, D.D. A correspondent informs ns that, when he was an apprentice to a firm of wholesale druggists in 1842, Dr. Tyler represented Liddiard & Co., of the chemical-works, Ocean Street, Stepney. There may be others left in the trade who will still remember the reverend gentleman in his commercial capacity, and they will be interested to read the biographical sketch.

MR. R. A. RICHARDSON, traveller for a well-known London drug-firm, had an inpleasant quarantine experience last month in returning by the Lisaine Castle from Mauritius to Natal. He and the rest of the passengers wrote a letter to the Natal Mercury, in which he narrates how twenty-nine persons were hindled together, at the Bluff Quarantine Station, in six beds composed of long coarse grass, thrown in anyhow, with no proper provision for feeding, and with neglect in other respects.

OUR LATE PARIS CORRESPONDENT .- We take the following from the current number of l'Union Pharmaceutique, of Paris: - "THE CHEMIST AND DRUGGIST devotes a eulogistic and sympathetic article to its Paris correspondent, M. Crense, who has just died in his fifty-sixth year. Students of the Paris School of Pharmacy knew well this assiduous frequenter of their library, and members of the Société de Pharmacie used to express astonishment when they found that he had not arrived before themselves in the meetinghall, where, on session-days, he sat himself down at the extremity of the bench nearest to the presidential table, attentive to the proceedings, of which that very day he sent a summary to his journal. These session-days falling on Wednesday, the account of the proceedings reached Paris again the following Saturday, long hefore any Parisian journal had made any mention of them. M. Crense, a Frenchman hy birth, studied in Paris, where he took the degrees of Bachelier ès Lettres and ès Sciences; but he did not wait to be admitted there into the French pharmacentical profession. He settled in New York, and practised there for some years; there also, in 1862, he qualified for the membership of the College of Pharmacy. But by inclination he was a journalist, and he did not wait long before relinquishing his professional practice to become one of the leading members of the staff, and for a timo even the principal editor of the Druggists' Circular. In his hands this journal expanded considerably, until it had hecome the widest-read and most influential pharmaceutical organ in the States. M. Creuse possessed an elegant style and great knowledge. Those who, as we did, followed his weekly correspondence in THE CHEMIST AND DRUGGIST, learned to appreciate highly the intelligence and character of this distinguished colleague. Moreover, he was as ohliging as he was modest. Settled in Paris about six years ago, he died from the effects of a cancerous affection of the eye. Our British contemporary has illustrated its memoir hy a portrait of striking likeness.

Trade Notes.

PRICE'S PATENT CANDLE COMPANY (LIMITED) show a profit for the six months to June 30 of 37,529*l*, and the directors propose a dividend of 15s. per share, 19,059*l*. heing carried forward.

SEQUAH (LIMITED)—In our Summary note last week it was stated that the annual distribution on the ordinary shares had heen 10 per cent. It was, in fact, 14 per cent., as appeared in our report of the annual meeting.

WE stated last week that Mr. Pascall's tins of Herbal Tablets made a good sixpennyworth. No price was marked on the sample tin, but it looked like a sixpenny one. We are informed that it is supplied to retail at 3d.

The island of Montserrat is not to be famous for its lime fruit and juice only. Messrs. Evans, Sons & Co., of Liverpool, are now importing an arrowroot therefrom which they introduce to the trade as "Montserrat Arrowroot." They guarantee it to be equal in quality to the finest Bermuda, though it is as low in price as the best St. Vincent or Natal product.

MESSRS. H. POTHS & Co., of 4 Creechurch Lane, E.C., have taken over from Messrs. Hertz & Collingwood the agency for Charles Koch's Successors, manufacturers of linen, linen-lined, and papyrolin sample-bags, and other stationery. These goods are made in Frankfort, and are much used for sending samples by post, and for other purposes where extra strength of the envelope is required.

MR. James Townshend, medical-lahel printer, of Exeter, sends us samples of his chemists' almanacks for 1892. These are a purse almanack, a bouquet almanack, and an (octavo) "Universal" almanack. The last is illustrated, and contains many pages of such information, simple remedies, &c, as a chemist may appropriately circulate. Plenty of space is left for the chemist himself to fill.

As volnmetric analysis is a snhject which all Minor students must henceforth be proficient in, we may call attention to the nice set of apparatus which Messrs. Poths & Co., Creechurch Lane, E.C., offer this week. The set is in accordance with the British Pharmacopecia, and for regular shop use. A chemist has in it all the apparatus that he needs for testing acids and other snbtances.

MR. JOH. RYE HOLMBOE, exporter of cod-liver oil, Tromsoe. Norway, has appointed Messrs. Fuerst Bros., of 17 Philpot Lane, London, E.C., to represent him for the sale of his cod-liver oil and other Norwegian fish-oils in London, the south of England, and Wales; while Messrs. Rohertson, McIntosh & Co., of 17 Oswald Street, Glasgow, are appointed agents for Scotland, the north of England, and Ireland.

MR. G. T. W. NEWSHOLME, of Sheffield, appears to he the first in the field with a set of microscope slides for Micor students. The dozen which he sends us are beautifully stained and monnted sections of stems and the like, which show clearly the structures that Minor men will he called upon to recognise in the hotany examination. Each slide is marked with its characteristic feature, so that the student may know what to look for in his histological practice.

To those students who have difficulty in adequately studying pharmacognosy in home-reading, the materia medica collections prepared by Messrs. Southall, Bros. and Barclay, of Birmingham, will prove a valuable aid. There are two collections (A and B) of selected specimens of nearly all Pharmacopoial drngs, including those of the additions, differing only in respect to the get-np. Each A specimen is in a parchment hag, lahelled with the name, &c.; while the B specimens are in numbered hoxes or hottles accompanied by a key. The latter is the preferable style for recognition. We would suggest that the firm should add to the collection, or make a separate collection of, the unofficial drugs which Minor students will henceforth be required to recognise. We may also mention that the firm prepare a collection of B.P. chemical specimens useful both for recognition and systematic testing; and they offer, too, a herbarium of the more important British medicinal plants.

Educational Information.

IN several of the branches of education which annually come under review in these columns, important changes have been shadowed forth during the past year. Thus tho General Medical Council have supplemented their resolution to extend the Medical Curriculum to four years' education and one year's practice hy expurgating the list of examinations in preliminary education which have hitherto been recognised by them. In dentistry there has been a remoulding of the method of examination pursued by the London hoards; while in pharmacy the new examination schedules come into force next month, there has been a semi-official attempt to raise the standard of the Preliminary examination, and the Pharmaceutical Society of Great Britain have passed certain hy-laws which affect registration chiefly in the matter of fees, but also adding to the requirements of the Minor examination a knowledge of the poison laws. The confirmation of these hy-laws hy the Privy Council has not yet heen announced. The Pharmaceutical Society of Ireland have also slightly altered their Preliminary examination since our last review. These matters, in common with all other particulars regarding medical, pharmaceutical, and scientific education, are fully dealt with in the following pages, but we desire at this stage to specially emphasise the necessity for a sound education on the part of all those who wish to emhark upon any of the professioos herein dealt with. It is not enough for a youth to say that he has passed through a historic school, or has attained the highest Government standard, he must know the subjects of preliminary education which the several registration authorities have fixed as the minimum of knowledge. All youths who intend to follow any of the professions should have the last two years of their school life devoted to the subjects of an examination which is recognised by all such authorities. The Local Examinations of the principal universities of Eogland and Scotland are a good standard to aim for, and many schools make the training for these examinations a feature of their curricula. It is unfortuoately the case that education in this country is, to a large extent, traditional. School reputation is useless to a man entering the professions if it he not backed up with sound [education, a well-trained mind heing the hest introduction to the higher hranches of knowledge. That is why registration authorities have instituted prelimioary examinations.

PHARMACEUTICAL.

PHARMACY in the United Kingdom is a free trade in all respects, except in regard to the sale of poisons and, in Ireland only, the dispensing of medical prescriptions. These functions are restricted by Acts of Parliament, which also protect the titles of those engaged in the calling. There are certain trade customs which should he known to those who propose to enter the craft. In Great Britain, which will first have our attention, there is a law, which came into force in 1868, restricting the sale of certain poisonous articles to individuals who have been registered as "chomists and druggists." The effect of this is substantially to make chemists and druggists the suppliers of medicines generally, although anyone may sell those medicines which are not

poisons. The Pharmacy Act requires of those who are, o who desire to he, chemists and druggists that they shall have skill and knowledge within lines determined from time to time hy the Pharmaceutical Society, with the approval of the Privy Council; and the effect of the standard so created has been to make chemists and druggists a class recognised as the suppliers of medicines. This prestige, combined with sound husiness habits, is sufficient to make pharmacy a desirable calling, superior to other shop trades in the matter of culture, and capable of affording a fair living to anyone who follows it. Few fortunes are made in pharmacy, especially during late years, wherein competition with unregistered dealers and limited companies has played havoc with traditional profits. It is right, therefore, that we should warn beginners that they will not find pharmacy to be a flowery path to fortune.

It is, however, a fascinating and respectable occupation. Those who enter it must serve an apprenticeship of from three to five years, but before they hegin this they should pass the Preliminary examination of the Pharmaceutical Society of Great Britain, or its equivalent, so that when they hegin shop duties their spare time may he occupied by the study of science and other objects germane to the occupation. Those who contemplate becoming medical men after they have had some experience of pharmacy, should pass an examination recognised by the General Medical Council rather than that of the Pharmaceutical Society. The reasons for that will he explained later on, but here we may say that the

PHARMACEUTICAL PRELIMINARY EXAMINATION

is rather narrow in scope, comprising the following subjects:--

LATIN. - Grammar; translation of simple sentences from English into Latin; translation into English from Cæsar, "De Bello Gallico," Book I., or Virgil, "Æneid," Book I.

[In each examination paper passages from both of these anthors are given, but a candidate is required to translate from one anthor only.]

Anthmetic. — The first four rules—simple and compound; vulgar fractions and decimals; simple and compound proportion; a thorough knowledge of the British and metrical systems of weights and mea-

ENGLISH. Grammar and composition.

A good idea of the nature of the examination may he obtained by comparing the questions which have heen given this year. These were published in the issues of THE CHEMIST AND DRUGGIST, January 17, April 18, and July 18. Generally the papers given contain the following:—

LATIN.—Five short Eoglish sentences which all candidates must translate into Latin. Two passages from Casar to he translated into English, and four grammatical questions, two of which are based on the passages. Or the candidate may take Virgil, from whose Æneid there are also two passages with four grammatical questions.

ARITHMETIC.—Seven questions, the working of which has to he written out in full. Usually there are two rule-of-three "sums," one in vulgar fractions, one or two in decimals, one in the metric system, and one in square measure, profit and loss, or the like.

ENGLISH.—A passage is given for analysis, or for parsing and selection of verbs, &c. Questions are also given in parsing and correction of sentences. There is also an unpunctuated passage, in which candidates have to supply capitals, stops, and inverted commas, where necessary. Then the candidate has to write a short composition on one of a selection of subjects, which tests not only the handwriting and spelling, hut the candidate's powers of observation and knowledge acquired hy reading, travel and play.

The examination is conducted in writing, and for each subject one and a half hour is allowed. It is held on the second Tucsdays of January, April, July, and October, at the towns named below. Candidates must give notice of their intention to appear, and pay the fee of 21. 2s. to Mr. Richard Bremridge, Registrar, 17 Bloomsbury Square, London, W.C., at least fourteen days before the date on which the examination is to be held, stating at which centre he desires to be examined. The following memorandum will be useful:—

Examination held on October 13, 1891 January 12, 1892

> April 12, 1892 July 12, 1892 October 11, 1892.

Fee to be paid not later than— September 29, 1891 December 29, 1891 March 29, 1892 June 28, 1892 September 27, 1892.

ENAMINATION CENTRES,

With names and addresses of the superintendents.

Aberdeen-Mr. Alex. Straehan, 138 Rosemouut Place

Aberystwith -Mr. E. P. Wynne, 38 Pier Street

Birmingham Mr. Chas. Thompson, 159 Stratford Road, Sparkbrook

Brighton-Mr. J. R. Gwatkin, 49 Grand Pacade

Bristol-Mr. John Stroud, Chesterfield House, Ashley Hill

Cambridge -Mr. Arthur Deek, 9 King's Parade

Canterbury — Mr. Edwin Bing, 41 St. George's Street

Cardiff-Mr. John Munday, 1 Duke Street

Carlisle-Mr. M. H. Pattinson, 22 Charlotte Street

Carmarthen -Mr. Walter Lloyd, 12 Lammas Street

Carnaryon — Mr. John Jones,

Castle Square
Darlington -Mr. James Robinson,

5 Northgate
Douglas (Isle of Man)—Mr. A. W.

Brearey, Prospect Hill

Dundee - Mr. James Hardie, 68 High Street

Edinburgh — Mr. J. B. Stephenson, 48 North Frederick Street

Exeter-Mr. J. H. Lake, 41 High Street

Glasgow-Mr. Alex. Kinninmont, 69 Portland Street

69 Portland Street Guernsey — Mr. J. B. Niekolls,

States Analysts' Office

Hull — Mr. C. B. Bell, 6 Spring

Bank

Inverness-Mr. William Ogston, 18 Union Street

Jersey Mr. George Cole, 4 King Street

Laneaster — Mr. James Vinee, 37 Cheapside

Leeds Mr. Richard Reynolds, 13
Briggate

Lincoln-Mr. Joseph Maltby, High Street

Liverpool-Mr.Riehard Parkinson, 1 William Henry Street

London - Several

Manchester-Mr.F.BadenBenger, 7 Exchange Street

Newcastle-on-Tyne -Mr. N. H. Martin, 29 Mosely Street

Northampton-Mr. John Bingley Norwlch — Mr. F. Suttou, Bauk Plain

Nottingham-Mr. W. H. Parker, 177 Alfreton Road

Oxford -Mr. G. T. Prior, 32 Broad Street

Penzance - Mr. Benjamin Shakerley, 27 Market Place

Peterborough — Mr. Marshall

Heanley, Market Place
Plymouth -- Mr. F. W. Huut, 106

Old Town Street Sheffield -Mr. William Ward, 136

South Street, Moor Shrewsbury — Mr. W. G. Cross

Mardol

Southampton—Mr. O. R. Dawson, 63 Belle Vue Road

Worcester-Mr. Charles Virgo, The Foregate

York — Mr. Joseph Sowray, 57 Petergate

In all cases the superintendents intimate to candidates about a week before the date of the examination, the place at which it is to be held. It begins punctually at 11 a.m., Latin being taken from 11 to 12 30, arithmetic from 12 30 to 2, and English from 3 to 4 30. The interval is a lunch hour. It should be understood that the questions are set and the answers examined by the College of Preceptors: the superintendents have nothing to do with them, their duty being to see that candidates conduct themselves properly. Candidates are informed of the result of the examination about a fortnight after it is held, and, if they pass, their names are placed on the register of apprentices or students of pharmacy.

We are often asked what books are suitable for the Preliminary students, and we only name the following with the reservation that students should be gulded by their

eachers:—

LATIN: Dunlop's Course of Grammar, 1st and 2nd years (Chambers; 6d each); White's "Gosar," Book I., and "Virgii," Book I. (Longmans; 1s. each); Keya are published by Cornish at 1s. each.

AUTHMETIC: Barnard Smith's "School Arlthmetic" (Macmillan; 4s. 6d.); "The Metric System," by the same (Macmillan; 3/.).

ENGLISH: Morell's "Grammar and Analysis" (Longmans; 2s. 61).

CERTIFICATES ACCEPTED.

The Pharmaceutical Society, following the example of the General Medical Council, has empowered its boards of examiners to accept, in lieu of the Preliminary examination, the certificates of certain examinations. The Pharmacentical Council has the power to accept, by special resolution, any certificate other than those indicated in this list. The list is that of the General Medical Council, but it also applies to pharmaceutical students, who should note the following requirements imposed by the Pharmaceutical Society, viz.:—

1. The certificate must show that the candidate has passed the compulsory subjects of the examinations named.

2. Latin, arithmetie, and English must be included.

These are not so stringent, it will be observed, as those of the Medical Council herein detailed:—

University of Oxford.—Junior Local [to include Latin and Mathematics, and either Greek, French, or German]. Senior Local [to include Latin and Mathematics]. Responsions. Moderations. Degree in Arts.

University of Cambridge.—Junior and Senior Local [on same conditions as Oxford] Higher Local. Previous Examination. Degree in Arts.

University of Durham.—Certificate of Proficiency. Examination for Students at the end of their first year. Degree in Arts. [The Pharmaccutical Society also accepts the Junior and Senior Local, and the Registration Examination for medical students.]

University of London.—Matriculation. Preliminary Scientific (M.B.). Degree in Arts or Science.

Victoria University.—Preliminary Examination, including Latin. Entrance Examination in Arts [to include all subjects].

University of Edinburgh.—Junior Local [to include English Literature, Arithmetic, Algebra, Geometry, Latin, and Greek, French, or German]. Senior Local [to include English Literature, Arithmetic, Algebra, Geometry, Latin, and Greek, French, or German]. Medical and Science Preliminary. Degree in Arts ["or Science," adds the Pharmaceutical Society].

University of Aberdeen.—Junior and Senior Local [on same conditions as Edinburgh]. Medical Preliminary. Degree in Arts.

University of Glasgow.—Junior and Senior Local [on same conditions as Edinburgh]. Medical Preliminary. Degree in Arts.

University of St. Andrew's.—Junior and Senior Local [on same conditions as Edinburgh]. Medical Preliminary. Degree in Arts.

University of Dublin.—Public Entrance Examination. General Examination at end of Senior Freshman year [not in Pharmaceutical Society's list]. Degree in Arts.

Queen's University in Ircland.—Local [all the subjects required by the Medical Council]. Matriculation Examination. Previous Examination for B.A. Degree in Arts.

Royal University of Ireland.—Matriculation Examination.

[The Pharmaceutical Society adds:—First University Examination, Second University Examination, Degree in Arts.]

Oxford and Cambridge Schools Examination Board.— Certificate [to include all the subjects required by the Medical Council, and Greek, French, or German].

Society of Apotheraries in London.—Examination in Arts.

Royal Colleges of Physicians and Surgeons of Edinburgh.—Preliminary.

Faculty of Physicians and Surgeons of Glasgow.—Preliminary.

Royal Colleges of Physicians and Surgeons in Ireland.— Preliminary [to include Mathematics].—The Pharmaceutical Society does not mention the College of Physicians.

College of Preceptors.—First-Class Certificate, or Second-Class Certificate of First or Second Division, Algebra, Geometry, Latin, and either a Modern Language or Greek or Chemistry, Botany or Zoology, having been chosen.

Intermediate Education Board of Ireland .- Junior, Middle, and Senlor Certificates [all the subjects].

- * Queen's Colleges of Belfast, Cork, and Galway .- Matriculation [not on the Pharmaceutical Society's list].
- *St Divid's College, Lampeter.—Responsions [all the subjects; but not on the Pharmaceutical Society's list].

Educational Institute of Scotland .- Preliminary Medical.

- *Pharmaceutical Society of Great Britain .- Preliminary and Minor Examinations (pro tanto).
- *Pharmaceutical Society of Ireland. -Preliminary Examination (pro tanto) [not recognised by the Pharmaceutical Society of Great Britain]

Scotch Education Department.—Leaving Certificates in each grade and in Honours [the Pharmaceutical Society requires Latin, Arithmetic, and English to be obtained at one Examination].

The Pharmaceutical Society recognises the following in addition to the foregoing :-

Royal College of Surgeons of England .- Preliminary Examination.

Apotheearies' Hall of Ireland. - Preliminary Examination in General Education.

Owens College.—Junior Students' General Examination.

Incorporated Law Society .- Preliminary Examination in General Knowledge

The acceptance of these certificates by the General Medical Council is commented upon under "Medical." So far as pharmacy is concerned, we have only to add that those who desire to be registered as students of pharmacy must send the certificates which they hold to Mr. Bremridge, with the fee of 2l. 2s.

Although we strongly advise all beginners in pharmacy to complete this stage of their education before they actually begin apprenticeship, it is right to add that this is not legally compulsory. From the nature of

THE QUALIFYING EXAMINATION,

and the conditions imposed, it is, however, apparent that it is morally incumbent upon all to adopt the course which The regulations for the Minor, or qualifying examination, are as follows:-

1. Candidates must be 21 years of age, and deposit with Mr. Bremridge a registrar's certificate to that effect.

2. They must be registered as apprentices or students. 3. They must produce a declaration, certified by a pharmaceutical chemist, chemist and druggist, or medical practitioner, that they have been practically engaged for three years in the translation or dispensing of medical prescriptions. Printed forms for this declaration may be obtained from Mr. Bremridge, 17 Bloomsbury Square, W.C., to whom the fee of 31. 3s. must be paid, and notice given not later than the first day of the month in which the examination is

they desire to be examined in Edinburgh or London. They must satisfy the examiners of their competency in the subjects named, and to the extent indicated in the following schedule: -

to be held, candidates at the same time stating whether

PRESCRIPTIONS.

The caedidate is required to read without abbreviation autograph prescriptions; translate them late Eeglish; understand the grammatical construction of the Latin; and render a literal as well as an appropriate translation of the directions for use. To detect errors, discover unusual doses, ned bave a general knowledge of posology. To calculate percentages and other quantities occurring in prescriptions; also to render in good Latin ordinary prescriptions written in English.

PRACTICAL DISPENSING

To weigh, measure, and compound medicioes; write the directions in concise language in a neat and distinct hand; to finish and properly direct each package. [In awarding marks in this subject the time taken by the can tidate in doing the work is taken into account.]

PHARMACY.

The candidate will be required to possess a general knowledge of the following branches :-

- (a) Operations requiring the use of heat. Evaporation, with particular reference to the preparation of extracts and insplasated julces; special characters and modes of preparing the various classes of extracts; influence of surface, temperature, and pressure upon the rate of evaporation; water, steam, and sand-baths; distillution, ordinary, fractional, and destructive, distinctive characters and objects of each; official preparations illustrating the various kinds of distillation, apparatus employed, the retort and receiver, stili, and worm. Lleblg's condeeser, principles on which they are constructed and used. Sublimation; its objects and applications in pharmacy; official products of sublimatioe, calcination, and fusion. Desiccation; temperature best sulted for drying particular drugs, loss in drying vegetable drugs, forms of drying ovens, principles on which they are constructed and usod.
- (β) Disintegration of solid substances; cutting, bruising, and pulverisation : apparatus employed, principles indicating which is to be adopted in particular instances; methods for controlling the degree of comminution, sieves and sifting, trituration, levigation, clutriation, granulation, jucluding methods for producing certain chemicals as fine powders, small erystals, scales, &c. Solution: its nature, solvent power of various menstrua, lufluences of (a) temperature; (b) state of division of the substance to be dissolved; (c) time; (d) position of the substance in the menstruum; lixiviation, infusion, digestion, and decoction; maceration, percolation, and displacement, principles on which the successful performance of these processes depends; form and materials for percolators and other vessels employed. Filtration, objects and methods, filtering media, means of expediting filtration; dialysis: its application in pharmney, construction and use of the dialyser. Expression: methods of obtaining the julces from plants; recovery of the residual liquids from tineture mares, &c., serew, hydraulic, and other presses. The principles involved in the dispensieg of medicines, particularly with reference to the best excipients and methods for forming pill masses, the preparation and nature of emulsions, the most suitable emulsifying agents, and the best means of suspending insoluble substances in liquids.
- (y) The caudidate will also be required to show a practical knowledge of the processes, and understand the principles of the processes by which the official preparationa belonging to the following classes are made, viz., collodions, confectioes, decoctions, dilute acids, extracts (solid and liquid), glycerines, infusious, juices, liniments, lotions, mixtures, ointments, plli masses, plasters, powders (simple and compound), solutions, spirits, snppositories, syrups, tinetures, vinegars, waters and wines. He must be able to conduct such of the operations, or parts of them, us may he required by the examiner. A knowledge of the proportion of active ingredient or crude material in official preparations containing aconite, antlmony arsenic, hellndonna, Calahar beau, cantharides, hydrate of chloral, chloroform, caustic potash and sola, colchicum, digitalis, elaterinum, ergot, iodine, iodoform, ipecacuanha, lead, mercury, nux vomica, opium phosphorus, seammony, stramonium, squili, nlkaloids aud alkaloidal salts.

MATERIA MEDICA.

The candidate is required to recognise specimens of any crude drug mentioned in the British Pharmacopein or in the anuexed list, and to describe their methods of production and their characteristics so far as may be necessary to detect adulteration or substitutiou. He must be familiar with their geographical source, the botsulcal and zoological names of the plants and animals yielding them, the natural orders to which they belong, and the localities from which they are obtained. The candidate will be required to name their chief active constituents and also the official preparations into which they enter.

Althrea officinalis Iuuln Heienium Aikanna tinctoria Bryonia alba et dioica

Rhitomes de.

Helleborus niger Sangulnarla canadensis Iris florentina Allium sativum Veratrum album Acorus Calannis Agropyrum (Triticum) repens
Barks.

Berberis vulgaris Cinnamodendron corticosum Simaruba amern Erythropblaum gal-necuse Quillala saponaria Prunus serotina l'Imus campestris Cinnamonium Cassia

Griudelfa squarrosa et Trigonella

rohusta Tussilago Farfara Spigelta marilaudlea Marrubium vulgare Solanum Dulcamara Euphorbia pilulifera Convallaria majalis

Plowers.

Calcudula officinalis Pyrethrum cinerarla:fo-lium, &c. Arnica montaua

Fruits.

Punica Granatum Cumlnum Cyminum Cipsicum annuum Laurus nobills Piper longum Vanilla planifolla

Seeds.

Paullinia sorbills (Guarana)

Seeds. Fœuum

graecum Dipteryx odorata Pyrus Cydonia Strychnos amara Hyoseyanius nicer Amonium Melegueta Areca Catechu

Mucuna pruriens

Juices, &c.

Acacia Catechn Lactnea virosa (Lactncarium)
Aloe spleata, & e.
Curare (Woorari)

Gum-Resins. Boswellia Carlerii. &c. Euphorbia resinifera

Oleoresins. Pistacia Terchinthus

[•] The examinations of the hodies to which an asterisk is prefixed willi not be accepted by the General Medical Council for purposes of students' registration on and after January 1, 1892. (See under " Medical," p. 442)

Rains.

Callitris quadrivalvis Pruites succiurfer Calamas Draco

Copping in Sandares.

Capalrus ceispus

Anima! Sibitanes. Ly opplium olavatam, Spongia officialls
Concas Lucia
Kara vestbalo us
Contara vestbalo us
Contara vestbalo us Custor fiber

BOTANY.

The candidate will be require i to recognise any af the plants specified in the list appended to this schedule; to refer any flowers that may be shown to him to their class and sub-class; to possess a general knowledge of the internal structure of stems, leaves, and roots, and their parts, and of tho elementary tissues of which they are composed; to describe a cell, its structure, and usual contents; to explain the thickening of cell-walls, and to describe the manner in which cells are combined to form tissues. distinguish between roots and stems, and to name such important modifications of either as pre-ent distinguishing characteristics. To name correctly such leaf-shapes as are shown, and to recognise appendages or any important modifications of the leaf. To have a practical knowledge of the various arrangements of leaves or flowers in the bud, and of the different kinds of phyllotaxis and of inflorescence; to understand the principles of branching, and the different kinds of branch systems. To possess a general knowledge of the processes of reproduction of plants, and to discribe those of phanerogams and ferus. To name and describe the arrangements of the parts of the flower, the number, position and shape of the fibral envelopes, and of the organs of reproduction, to name and describo the different kinds of fruits, and the various modes of dehiscence and kinds of placentation. To have a general knowledge of the physiology of plants, and to describe the functions of the roots, stems, and leaves. To be acquainted with the materials which form the food of plants, and to understand the part played by starch, sugar, and alcurone grains in the life of the plant. To recognise, by means of the microscope, sections of stems of dicotyledonous, monocotyledonous, and cryptogamic plants: soiral, reticulated, and se lariform vessels; as well as the simpler s ructures, such as stomata, pollen grains, and hairs.

List of Plants for Recognition.

Aconitum Nape'lus Papaver Rhœas sonniferum Brassica alha Cochlearia Armoracia Althrea officinails Rnta graveolens Cytisus Scoparius Resa canina Bryonia dioica .Hthusa Cynapium Conium maculatum Fæniculum capillacenm Lavandula vera Enanthe crocata

Valeriana officinalis Achlilea Mullefolium Anthemis nob.lis Matricaria Chamomilla Daphne Laureola Taraxaeum officiuale Menyauthes trifoliata Borago officinalis Atrona Belladanna Datura Stramonium Hyoscyamus niger Solanum Dulcamara Digitalis purpurea Mentha piperita

Mentha viridis Pulezium Rosmarinus officiua'is Mezerenui Juniperus Sahina Taxus baceata Colchieum autumnale Aram maculatum Avena sativa Hordeum vulgare Triticum sativum Aspidinm Filix-mas

CHEMISTRY AND PHYSICS.

The candidate will be expected to possess an elementary knowledge of the following subjects :-

- (a) The law of the conservation of energy; the law of gravitation; the British and metric system of weights and measures; the balance; specific gravity; atmospheric pressure; the harometer, air-pump, and syphon; the law of Boyle; temperature; thermometer; the law of Churles; the law of gaseous diffusion; V. Meyer's method for determining vapour
- (β) The chief characteristics of chemical action, the distinction of elements and compounds; the laws of chemical combination by weight and volume; the hypothesis of Avogadro; atomic weight and molecular weight; chemical formulæ and nomenclature; valency; the distinction letween metals and non-metals.
- (y) The general characters of the non-metals; the chief methods of preparation and the typical reactions of the following non-metallic elemeats and compounds: - Hydrogen, oxygen, ozone, water, peroxide of oxygen; chlorine, bromine and fodine, and their compounds with hydrcgeu and oxygen; fluorine, hydrofluoric acld; nitrogen, ammonia, the oxides of nltrogen, nitrous acid, nitric acid; sulphur, sulphuretted hydrogen, snlphurous and sulphuric anhydrides and acids, thiosulphuric acid; phosphorus, phosphine, the oxides and oxy acids of phosphorus, the chlorides of phosphorus; silicon, silica, finoride of silicon, silicofinorie acid; boron, horic acid. The usual impurities in those of the above mamed substances that are included in the British Pharmacopecia.
- (8) The general characters and classification of the metals, and the goneral methods of forming oxides and salts; the sources, the usual methods of extracting, and the chief properties of, the undermentioned metals, and the principal modes of preparation, properties, adulterations, and contaminations of such of their compounds as are described in the Beitish Pharmacoposia: -Potassinm, acdlum, ammonium, lithium, barinm, calcium, magaeslum, zinc, aluminium, iron, chronium, mangaacse, arsenium, antimony, tin, copper, bismuth, lead, silver, mercury, gold, and matinum.

(e) Carbon, its oxides, cyanogen, hydrocyanic acid, cyantile of votassium, ferrocyanide and ferricyanide of potassium, oxalic acid. The chief methods of preparing marsh gas, ethyleno, alcohol, aldehydo, acetic acid, acetate of ethyl, spirit of nitrous ethor, nitrate of amyl, hydrate of chloral, chloroform, iodoform, futor; the principal properties, roactians, and mutual relations of these Gupounds. The caudidate will also be expected to possess a general knowledge of the methods of estimating carbon, hydrogen, oxygen, and nitrogen in organic compounds, and of obtaining molecular formulae.

Note.-Candidates will be expected to solve shaple problems relating to the weight and volume, nader different conditions of temperature and pressure, of elements and compounds concerned in chemical reactions.

CHEMISTRY .- Practical Examination.

To determine the specific gravity of liquids and solids, to be familiar with the general coastruction and use of the thermometer and barometer.

To recognise by chemical tests the more important non-metallic elements and computads, as well as the metals and salts indicated in the foregoing list; to detect the chief impurities in those that are included in the British Pharmacopæia; to recognise by their physical properties those which possess well-defined characteristics.

To identify by chemical tosts the organic compounds before enumerated, and, in addition, tartaric and citric acids, starch, cane-sugar, grape-sugar, salicia, quinine, morphiae, and strychnine; and to detect the impuritles in such as are included in the British Pharmacopæia.

To perform those volumetric determinations which are described in tho B itish Pharmacopæia.

To quantitatively determine the total alkaloids in cinchona bark, and in the tincture and extract of nux vomica and the morphiac in opium.

The candidate will further be expected to have a practical acquaintance with the methods of preparing the more important inorganic substances, including the non-metals and their compounds, and such metallic compounds as are included in the British Pharmacopæia, and also the following organic compounds :- Ether, chloroform, spirit of nitrous ether, nitrite of amyl, acetate of ethyl, and hydrocyanic acid, so that he may he able to explain to the examiner the operations involved in their preparation, and, if called upon, to perform the operations or certain stages of them

Such is the qualifying examination. We may add regarding it, before proceeding to give some hints on preparation, that it is conducted by the Board of Examiners for England and Wales, who meet at Galen Place, London, W.C., in February, April, June, July, October, and December; and by the Board of Examiners for Scotland, who meet at 36 York Place, Edinburgh, in January, April, July, and October. The examination is oral and practical. Good descriptions of it by Edinburgh and London candidates are given in TBE CHEMIST AND DRUGGIST for March 21, 1891. Since these were written the schedule given above bas come, or will come into force next month, but to a large extent the old description still applies, as the new powers will be enforced gradually.

THE COURSE OF STUDY.

Returning now to the student's position when be has passed the Preliminary examination, it will be seen from the scope of the Minor schedule how important it is to get done early with the Preliminary. The Minor examination will henceforth partake more of an examination in shop-subjects than it has ever been before. To a large extent, therefore, the examination is a test of the candidate's skill and experience as a druggist, hence the importance of careful attention to and intelligent interest in shop duties during apprenticeship. During this period the fundamental principles of the subjects, Prescriptions, Dispensing, and Pharmacy, are acquired by practice. A general statement regarding these subjects is not out of place. We add the names of the more popular books, those to which an asterisk is attached being preferred.

Prescriptions.

Text-books: "Pereira's "Selecta & Prescriptis" (Carrehill, 5s.); Ince's "Latin Grammar of Pharmacy" (Baillière, 4s.); "Wills's "Guide to Prescription Reading" (Westinluster College of Pharmacy, 1s. Ed)

With the aid of one or other of these books the student should examine and translate all autograph prescriptions which he comes across. Nothing but continuous and uninterrupted practice will make one proficient in reading and translating prescriptions. Instead of making the subject a task, the student should devote a quarter of an hour daily to prescription reading, taking it, if necessary, off the time devoted to newspapers. Some practice in reading badlywritten prescriptions is beneficial. There are some good examples of these in Proctor's "Pharmacy." For Posology, get up the doses as given in the British Pharmacopæia or in Squire's "Companion." There is a good posological table of potent medicines in "The Art of Dispensing." Attention should be paid to the detection of excessive doses, and distinguishing between what is exceptional, but intentional, and what may be accidental and harmful.

Practical Dispensing.

Text-books :- or The Art of Dispensing (Office of this Journal, 34, 6d.); Stirling's "Notes on Dispensing" (Gower, 1s.)

This is a subject which must be thoroughly practised with the guidance of "The Art of Dispensing." It is a good plan to compound the prescriptions given therein before reading the directions for overcoming difficulties.

Pharmacy.

Text-books:—°The British Pharmacopwia (Spottiswoode & Co., 6s.); c. Additions," 1s.; °Squire's "Companion to the B.P." (Churchill, 10s. 6d.) "Supplement," 1s.; °Proctor's "Lectures on Practical Pharmacy" (Churchill, 14s.); Gerrard's "Materia Medlea and Pharmacy" (Lewis, 8s. 6d.); Wills's "Elements of Pharmacy" (Westminster College, 6s. 6d.); Remington's "Practice of Pharmacy" (Burroughs, Welleome & Co., 21s.); Whitla's "Pharmacy" (Renshaw, 10s. 6d.).

As a knowledge of the preparations as well as the processes of the British Pharmacopæia is still a leading feature in this examination, we repeat the remarks made last year regarding the course of study.

regarding the course of study.

Taking the "Pharmacopœia" and "Squire" for guidance, the best course to adopt is to get an octavo note-book, and to use it for making an epitome of pharmacopœial facts, in something like the following manner:—

Name	Ingredients	Active Ingredients	How made	Dose	Physical Characters
Emp. bella- dona	Alc. extract, resin, and soap plas- ters	Ext. 1 ln 5	Plasters melted on water- bath, ext. added and mixed	-	Brown colonr
Ext.filic.liq.	Male fern coarsely powdered, and ether	_	Percolation, ether dis- tilled off and oily extract remains	minims	Greenish and thick, de- positing consider- ahly
Lin.crotonis	Croton and cajuput oils dis- solved in spirit	Croton oii 1 in 8	By mixing	_	Pale green, with odour of eajuput
Pil. coloc.	Coloc., B. aloes, res. scam., K.SO., oil cloves and water	aloes and R. scam. 2	Mixed and massed	5 to 10 grains	Chocolate colour, odours of eloves and colocynth predomi- nate
Tr. senegæ	Schega No. 40 p. and proof spt.	1 in 8	Maccration and per- colation		Pale brown, persistent froth, sp. gr. 0.934, extractive 0.93 p.c.

Each group of preparations should be kept by itself, and at the head of each group state what the preparations are, how generally made, the number of them in the Pharmacopeia, and so on. Squire's "Companion" will give some hints here, and the note-book may be made exceedingly valuable in afterlife by reserving a column for extra-Pharmacopeia facts derived from personal experiment or current literature. A few examples of this are shown in the last column.

Pharmacentical processes should now receive careful attention. So far there has been no text-book published which is specially adapted to the requirements of the schedule, but in Proctor's "Lectures" we have all the processes explained and illustrated. It is well adapted for English students. The lines upon which the schedule are drawn are not unlike the make-up of Remington's "Phar-

macy," wherein the processes are amply illustrated and described, with American examples.

It is impossible for the majority of students, until they enter schools of pharmaey, to practically acquaint themselves with all the processes mentioned in the schedule. Reading should, therefore, be liberal during apprenticeship, and careful observation should not be lacking. The pre-liminary work in tabulation, which has been sketched above, deals with the third paragraph of the subject-matter, and to this the student must especially apply his opportunities in the shop.

Materia Medica.

Text-books:—Bentley's "Organic Materia Medica" (Churchill, 7s. 6d.) "Pharmacographia" (Macmillan, 21s.); Muter's "Key to Organic Materia Medica" (Simpkin, 12s. 6d.); "Sectional's "Organic Materia Medica" (Churchill, 5s.); Willis's "Itateria Medica" (Westminster College, 10s. 6d.).

Recognition remains the chief requirement of this subject, and the student is now supplied with a list of the unofficial drngs, which he is expected to recognise and describe. The "B.P." and "Squire" are essential text-books here, and care should be devoted to acquiring a general knowledge of the composition of drugs. A collection of materia medica specimens is indispensable, and may be formed by the student as he goes through the Pharmacopæia, or a collection may be purchased for a moderate sum.

Botany.

Text-books:—Balfour's "Elementary Botany" (Black, 3s. 6d.); "Bentley's "Structural and Morphological Botany" (Churchill, 7s. 6d.); Prantl & Vines's "Text Book of Botany" (Sonneuschein, 9s.).

The most important thing to be noticed in the altered schedule is the introduction of the microscope. Upon this matter, Mr. John Humphrey's writes in an article on page 461. A good microscope at a reasonable price is not expensive, and all who can should early in their career secure one. Field practice in botany is an essential accompaniment of reading, and the student should take advantage, if he can, of local evening classes.

Chemistry.

Text-books:— Attfield's "Chemistry" (Gurney & Jackson, 15s.) Everett's "Physics" (Blackie, 3s. 6d.); Fownes-Watts "Chemistry" (Churchill, 10s. and 10s. 6d.); "Jago's "Inorganic Chemistry" (Longmans, 4s 6d.); Muter's "Short Manual of Chemistry" (Simpkin, 6s. 6d.); "Proctor's "Manual of Pharmaceutical Testing" (Office of this Journal, 2s. 6d.); Wills's "Chemistry" (Westmluster College).

It is almost impossible for a student to acquire a knowledge of chemistry adequate for practice as a chemist and drnggist without attending lectures on the snhject. Where possible, therefore, he should attend a conrse of lectures, and there are few towns in the kingdom where such are not to be found. A great deal of testing may he done in shop, where also the practice of volnmetric analysis and the assay of the specified drugs should be carried ont. The substance of a lecture to students on "Pharmacopæia Volnmetric Analysis" is crowded out of this issue.

The foregoing hints are intended to help the student in his work hefore entering a college or school of pharmacy, and we may add that the only royal road to success is systematic home-work before the collegiate conrse.

THE MODIFIED EXAMINATION,

like the Minor, entitles those who pass it to be registered as chemists and drnggists, but the only persons who can enter for it are those who were assistants before the Pharmacy Act of 1868 passed, and who registered their names with the Registrar before December 31, 1869. Only very few of such persons now remain unexamined. The fee for the examination is 11. 1s., and the subjects are prescriptions, practical dispensing, materia medica, and pharmacy. The practical subjects are substantially the same as in the Minor, but the rest of the examination is somewhat easier.

MAJOR EXAMINATION.

This is an optional examination, for the title of pharmaceutical chemlst originally instituted by the Pharmaceutical Society, and protected by the Pharmacy Act, 1852. Candidates for the examination must be chemists and drugglets

who have passed the Minor at least three months previously, and they must give notice to Mr. Bremridge of their intention to appear, and pay the foe of 5l. 5s. on or before the first day of the month in which the examination is to be held. The examination is a two-days' one, the first day being entirely devoted to practical chemistry, and the second to an oral or written examination in the other subjects, which are as follows:—

BOTANY.

In addition to what is required for the Minor, the candidate is expected to possess an intimate acquaintance with the parts of the flower, fruit and seed; to describe the structure and development of the pollen and of the ovule, and to trace the steps by which the latter is transformed into the seed. To have an intimate knowledge of the structure of cells, whether isolated or in combination to form tissues; of the contents of cells in their various stages of devolopment; and a general knowledge of the origin of gums, saids, and mineral and other secretions of plants. To he familiar with the composition of the cell-wall, its chemical nature. properties and reactions; with the changes it undergoes in the formation of wood, cork, and mucifage, and in the processes of thickening and cuticularisation. To possess a knowledge of the general principles of classification, the system of Linuxus, and of the natural system founded upon that of De Candolle. To be able to distinguish practically the natural orders included in the schedule appended below, and such of the lending genera of each of these orders as are therein specified; also to refer to their respective orders or genera such specimens included in the schedule as may be shown to him. To possess a general knowledge of the method of reproduction in cryptogams, and to describe that of mosses; to be familiar with the development of the spores in these plants, and to be able to compare the different organs with the corresponding organs in phanerogams; to possess a knowledge of the alternation of generations in the cryptogams, and the modifications under which this is represented in the phanerogams. To have a practical acquaintance with the use of the microscope, and hy means of it to recognise the various tissues found in the plant, the reproductive organs of cryptogams and phanerogams, and the more important cell-conteuts.

Schedule.

RANUNCULACEÆ	Rosa	Erythrma	EUPHORBIACEÆ
Anemone	Pyrus	Menyanthes	Euphorbia
Hellehorns	CCCUMBITACELE	CONVOLVULACEÆ	Buxns
Aconitum	Echalium	SOLANACE.E	CUPULIFED.E
PAPAVERACEJE	Bryonia	Solanum	Alnus
Papaver	UMBELLIFER.E	Physalis	Fagus
Chelidonium	Eryngium	Atropa	Quercus
CRUCIFER.E	Cicuta	Hyoseyamus	Corylus
Brassica	Carum	Datura	SALICACE.E
Cochlearia	Enauthe	SCROPHULANI-	Salix
VIOLACE.E	Fæniculum	ACE.E	CONIFER Æ
Viola	Dauens	Verhascum	Juniperus
MALVACEÆ	Conium	Scrophularia	Pinus
Malva	Coriandrum	Digitalis	ORCHIDACE.E
RUTACE.E	BIPSACEAL	LABIATE	AMARYLLIDACE,E
Ruta	Compositie	Mentha	I atdace.e
LEGUMINOS.E	Tusarlago	Origanum	Ĭr i s
Lathyrns	Inuia	Thymus	Crocus
Mimosa	Matricarla	Lamium	LILIACE.E
Cercis	Anthemis	Marrubium	Convallaria
ROSACE.E	Cichorium	POLYGONACRÆ	Rusens
Prunus	Lactuca	Polygonum	Allium
.Spiræa	GENTIANACELE	Rumex	Gnaminele
Potentiila			

MATERIA MEDICA.

This comprises a practical knowledge of the methods of estimating the value of important drugs, of distinguishing commercial varieties of the same, and of separating such of their active principles as are official in the British Pharmacopæia.

The candidate is also expected to have a general acquaintance with the active constituents of all important drugs, and to possess a general knowledge of the chemical properties of the official alkaloids, giucosides, resins, and essential and fixed oils.

The microscope will be introduced for the examination of certain drugs.

CHEMISTRY AND PHYSICS.

In addition to the subjects indicated by the schedule for the Minor examination, the candidate will be expected to possess a knowledge of the most important facts connected with \pm

- 1. The physical constitution of the three states of matter; liquefaction of gases, critical point; the diffusion of gases and liquids, clariysis; methods for determining vapour densities; solution.
- 2. The dynamical theory of heat; heat and temperature; sources, development, and propagation of heat; radiation, diathermancy and athermancy, separation of heat from fight; latent heat; buffur-point, distilla-

tion; freezing mixtures; specific heat; calorimeters; relation of specific heat to atomic weight; thermometers, the air thermometer; methods of determining exceedingly high and low temperatures.

- 3. The undulatory theory of light; reflection; refraction; propagation of light, the photometer; unirrors and lenses, the nicroscope; decomposition of white light by a prism; the spectroscopo, spectrum analysis; double refraction; polarisation, the polariscope; influence of light in promoting chemical change, the principles of the ordinary photographic processes.
- 4. The methods of producing magnetism; magnetic induction. Sources of electricity, frictional electricity; the electroscope; electric induction; electric machines; the Leyden jar; voltaic electricity; the principal forms of voltaic hatteries; the galvanometer; chemical effects of current; electrolysis; measurement of current, Ohm's law; voltameter; secondary currents, secondary batteries; thermo-electricity, the thermopilo; production of heat and light from electricity; electromotors; dynamomachines.
- 5. The history of the atomic theory; the hypothesis of Avogadro; the methods hy which the standard atomic weights have been determined; dissociation; specific volume; the periodic law.
- 6. Classification of carbon compounds; rational formula; isomerism-The characteristics and constitution of the chief typical organic compounds. The constitution, sources, methods of preparation, properties, reactions and mutual relations of the following organic compounds: Cyanogen derivatives .- Uren, cyannric acid, uric acid. Hydrocarbons .- Tho principal members of the parallin, of fine, acetylene, and benzene series; their chief haloid and nitro-derivatives. Theory of isomerism in parafflu and benzene series. Parafin derivatives,-Distinction of primary, secondary, and tertiary alcohols; the chief primary monohydric alcohols; glycol; glycerine (glycerol); mannite; ac taldehyde, chlorai; chloral hydrate; acetone; ether; the principal acids of the acetic series; olcic acid; glycolic and lactic acids; oxalic, succinic, malic, tartaric, racemic and citric acids; ethylamine; ncetamide; glycoeino; cane sugar; grape sugar; milk sugar; maltose; starch and cellulose. Benzene derivatives .-- Phenol sulphonic acid; phenol; resorcin (resorcinol); auiline; henzaldehyde; salicylaldehyde; henzoic acid; salicylic acid. The principal properties of the terpenes and camphors, esseutial oils, resins. The characteristics of naphthalene and its derivatives. The processes of alcoholic, acetic, lactic, and ammonic fermentation. The properties and decomposition products of the principal glucosides, alkaloids, and other substauces of definite chemical composition in the British Pharmacopæia.

CHEMISTRY .- Practical Examination.

The candidate will be expected to be able-

To analyse mixtures containing three metallic salts; to estimate the uitrogen in organic compounds by the soda-lime process; to determine melting and boiling points. To perform the operations (or certain stages of them) necessary for the preparation of cyanogen, artificial area, ethyl, chloride, iodoform, ethylene, ethylene dibromide, acetaldohyde, formic acid, oxalic acid, nitrobeuzene, aniline, henzoic acid, the nitrophenels. To recognise by their chemical reactions, and to determine, where necessary, by the Pharmacopeial gravimetric or volumetric methods, the strength and purity of the most important of the inorganic and organic compounds (including crude drugs and galenical preparations) described in the British Pharmacopeia. To detect and separate the most important alkaloids, alkaloidal salts and glucosides, and to separate in the pure state morphine from opium and strychnine from nux vomica.

In the practical portion of the Major examination standard works of reference are provided for the use of candidates, at the discretion of the examiner, No other books or memoranda are allowed,

This schedule, which has lately been revised and comes into force next month, is an excellent guide to the student. Only those who have had a good practical training and are well grounded in the sciences need attempt the examination. It is possible, by taking advantage of local science classes to the extent of the elementary stages in physics and advanced inorganic and organic chemistry, with home work in other subjects, to become fit for the examination. The following a e the most suitable books for the Major:—

 $_{\mbox{\footnotesize{Botany}}}.$ —Bentley's "Systematic Botany" (Churchill, 7s. 6d.), and Prant and Vine's book.

CHEMISTRY.—" Attiled" for practical; Thorpe's "Inorganic Chemistry" (Collins, 2 vols., 6s.)., and Remsen's "Organic Chemistry" (Macmillan, 6s.). for theoretical.

PHYSICS.—Ganot's large book (Longmans, 15s), may be read along with

Myteria Medica.—"Pharmacographia," or, preferably as a student's book, Wills's "Muteria Medica." For aid as to the histological characters of drugs, see Professor Malsch's "Manual" (published by Lea Bros., Philadelphia), which has good engravings. In "Pharmacographia" there are excellent, but unillustrated, notes on the microscopic characters of drugs.

EDUCATION IN PHARMACY.

In many towns throughout Great Britain there are classes for students of pharmacy instituted by local associations or private enterprise. These in most cases are all that is necessary, with systematic home work, to qualify for the Minor. In smaller towns there are no special pharmaceutical classes, hnt there are few places wherein South Kensington seience classes are not to be found. These are well snited for giving students of pharmacy the groundwork preparatory to a finishing course at a school of pharmacy. Very few of those who enter for the Minor have not passed through such a course, and, for the practical benefit to be derived from a properly arranged curriculum, we strongly advise all who can to attend a good school. Particulars of these and of local arrangements are appended. For further particulars refer to the advertisements of the respective

LONDON SCHOOLS.

THE SCHOOL OF PHARMACY,

17 Bloomsbury Square, W.C.

Dean: Prof. ATTFIELD, Ph.D., F.R.S.

This school enters upon its fiftieth session on October 1. having been instituted by the Pharmaceutical Society of Great Britain in 1842. All the subjects for the Minor and

Major are taught.

The session is divided into two courses of study; the first, beginning on October 1, is a six months' course, and comprises tuition adapted for the Minor examinations. Fees, 261. 10s. The second course, of four months, begins on April 1. and takes the student on to the Major examination. Fees, 201.; or, for the whole session, 401. 7s. Students may also take any subject or set of subjects they like. All the lectures, except pharmacy, are given at 9 o'clock in the morning, chemistry being taken on Tuesdays, Wednesdays, and Thuisdays; materia medica on Fridays; and botany on Mondays and Saturdays. Lectures on pharmacy are given on Tuesdays, Thursdays, and Fridays at 5 P.M.; and practical work on Mondays and Wednesdays, from 3 to 6 P.M., one lesson taking one and a half-hour. The chemical laboratory is open from 10 A.M. to 5 P.M. daily (Saturday, 10 A.M. to 2 P.M), and the fee for this snhject depends upon the length of time a student works in the laboratory.

SOUTH LONDON SCHOOL OF PHARMACY (LIMITED), 325 Kennington Road, S.E.

Principal: Dr. MUTER, M.A., F.R S.E. Secretary: Mr. W. H. DODD, F.C.S.

All the subjects of the pharmaceutical examinations are taught in this school, which was established in 1868. The session begins in the middle of September, and extends to July, the laboratories being open daily from 9 A.M. to 5 P.M., with luncheon interval. The three conrses of lectures for the Minor and Major begin on September 15, January 10, and April 15, but advanced students may enter at any time. Fees for the Minor (three months) 10l. 10s., and 2l. 2s. for every additional month. For the Major (three months) 12l. 12s, and 3l. 3s. per month thereafter. Individual subjects may be taken, and students may also enter the manufacturing and technical laboratory (extra fee 31. 3s. per month), where they can learn practically the manufacture of pharmaceutical preparations on the lines of the new pharmacy schedule. Students provide their own materials, and get the products.

WESTMINSTER COLLEGE OF CHEMISTRY AND PHARMACY,

Trinity Square, Borough, London, S.E.

Director: Mr. G. S. V. WILLS, F.L.S., etc.

Co-Principal: Mr. H. WOOTTON.

This school was instituted in 1871, for the purpose of giving instruction for all the pharmaceutical examinations. The session commences on the first Tuesday of September, and is divided into terms of seven weeks. The Preliminary class meets daily, from 10 to 12. Fee 3l. 3s. for the three months' course. Minor and Major students are expected to

devote the whole day-9.30 A.M. to 5 P.M. (Saturdays 10 A.M. to 12.30 PM)—to their studies. The fee charged for instruction in the Minor is 5l. 5s. for the period between September and the October examination, or between any two of the London examinations held between October and June; but there is a reduction subsequently, so that a complete course of instruction (14 weeks) for the Minor costs 9l. 9s., or a payment at the outset of 15l. 15s. ensures instruction until qualified as a pharmacentical chemist. For the Major the fees and hours are the same. Evening classes for the Minor are held on Tuesdays, Wednesdays, and Thursdays, from 7 till 9; fee 11.1s. per quarter, or 21.12s.6d per year. An evening Preliminary class is held on Tuesdays, at the same hour; fee 15s. per quarter. A class is also held for the Major, on Tuesday evenings, from 7 to 10; fee 1l. 11s. 6d. per quarter. There is an additional charge for dispensing to Minor evening students, but this subject and instruction in practical pharmacy and microscopy are included in the fees for the day classes.

THE CITY SCHOOL OF CHEMISTRY AND PHARMACY (LIMITED),

27 Chancery Lane, W.C.

Director-Mr. M. WILLIAMS. Secretary-Mr. R. HARRISON

This school was established in 1882, and now gives instruction in all the subjects of the pharmaceutical examinations. The session began on September 1, and the conrses of instruction are so arranged as to finish at the examination periods, 4l. 4s, being the fee for the Minor between any two examinations, or 7l. 7s. for a complete course of from three to four months. Practical instruction in dispensing, pharmacy, and microscopy is given. For a three months' course for the Major the fee is 5/. 5s. Evening classes are held on Tuesdays and Thorsdays, from 6 till 10, for all the examinations, at moderate fees.

CENTRAL SCHOOL OF CHEMISTRY AND PHARMACY, 173 Marylebone Road, N.W.

Principal—Mr. JOHN WOODLAND, F.C.S., &c.

Established 1877. Classes for the Minor and Major meet at 10 A.M. daily. There are three complete courses of instruction for Minor students; fee 101. 10s. per conrse. For the Major there are two courses of about five months each; fee 15l. 15s. per course.

OTHER METROPOLITAN SCHOOLS.

Mr. Frederick Davis, B.Sc., 26 and 28 Newington Causeway, S.E., privately instructs Minor and Major students in botany, chemistry, materia medica, microscopy, pharmacy, prescriptions, and dispensing, at fees which are a matter of arrangement, as each student is "coached" hy himself, and at a time agreed upon with Mr. Davis.

Mr. F. E. J. Oridland, 34 Old Broad Street, E.C., has a course of instruction for Minor students; fee 6l. 6s.
Mr. J. Coates, City Institute, 30 Ludgate Hill, E.C., gives instruction privately for the Preliminary and several Minor subjects.

PROVINCIAL SCHOOLS.

THE LIVERPOOL SCHOOL OF PHARMACY.

24 Newington, Liverpool.

Principal-Mr. J. S. WARD, F.C.S.

There is at this school a series of classes (full-time, afternoon, evening, &c.), of which full particulars will he found in the prospectus. The full-time Minor classes meet daily at 10 o'clock, instruction being given in all the subjects, for a period of three and a half months; fee 91 9s. These courses begin on the first Mondays of January, April, and September. Students are expected to own a microscope, or they may hire one from the principal for a few shillings. Practical pharmaey is taught. Three Major courses are held during the session; fee 62.6s. per course for the whole day, this including lectures and botanical and chemical laboratory instruction. The other classes which are held are specially adapted to suit the convenience of those holding situations in Liverpool or the neighbourhood. With a complete course

at these a student may be prepared for the Minor without leaving his situation.

MANCHESTER: OWENS COLLEGE.

Lecturer in Pharmaceutical Department-Mr. W. KIRKBY.

The instruction to stndents in this department is given by the professors in science—Mr. Kirkby, pharmaceutical subjects and botany. The winter session begins on October 1, and terminates in March, the course of instruction during this period qualifying for the Minor. The classes take up practically the whole day. Fee for the course, 12l. 12s. Any of the subjects may be taken separately by those who have part of the day only to spare. The summer course (May–July) is adapted for the Major requirements. The college offers annually an entrance exhibition of 10l for competition in October to stndents entering for the full Pharmaceutical course (Minor and Major examinations) The subjects of the examination are elementary botany and chemistry. A scholarship of 10l. and a prize of 5l. are also offered at the end of the winter session (1891-2) for competition among students proceeding to the course for the Major examination.

THE MANCHESTER COLLEGE OF PHARMACY, 225 and 227a Oxford Street, Manchester.

Directors-Messrs. W. S. TURNER and C. TURNER, F.C.S.

Mr. W. S. Tnrner commenced work as a teacher in 1877, and recently has taken his brother in association with him. Their conrses of instruction have recently been modified, but there remain full-time classes for the Minor and Major, and others taking up less time or meeting in the evening, which are well adapted for local students who wish to remain in their situations. In regard to the full-time classes we note that in March last the directors modified the carricula to snit the new regulations, and the instruction includes all the practical work now required. The Minor classes meet at 9 A.M. daily, the fee from September 1 (the beginning of the session) to the December Examination being 9l. 9s., and so on throughout the year, 3l. 2s. per month being the fee after the first payment. A complete course of instruction lasts for over three months; the same applies to the Major curriculum, for which the fee is 4l. 12s. 6d. and 1l. 12s. 6d. per month after the first quarter. The directors have recently revised the prospectns of the part-time classes. Arrangements are also made for Preliminary students.

> THE NORTHERN SCHOOL OF PHARMACY, 100 Burlington Street, Manchester. Principal—Mr. GEO. CLAYTON.

The session commenced on Angust 31. The classes are full time, afternoon, and evening, the two latter being specially arranged for local students. Although commenced only a year ago they appear to have been attended with success. The system is "tutorial." The "Day" Minor classes begin at 9 A.M., and the whole day is occupied up to 4 P.M., the subjects, both practical and theoretical, being gone over every day. Fee, 9l. 9s. for the course, which begins in Jatuary, April, or September. Major men work an hour longer per day, the fee for the course being 5l. 5s. For particulars regarding other classes we refer students to the Principal.

THE SHEFFIELD COLLEGE OF PHARMACY, 118 The Moor, Sheffield.

Principals—Messrs. R. B. Greaves, F.C.S., and J. W. J. Turner.

The term for the December examination commences September 21. Instruction by lectures and laboratory and dispensing practice is given in all the subjects for the Minor, the work being taken during the day (lectures in the forenoon and practical in the afternoon). Fee for three months' course, 81.8s., which qualifies for the Minor. Shorter courses, at cheaper rates, to suit the time of the student. We notice that the prospectus of the school contains some good advice to students, and the questions given at the Minor in January and April this year. A course of instruction is offered for the Major, and there is an evening elementary class for students under 20.

LOCAL ARRANGEMENTS.

ABERDEEN.

Science classes are held in Robert Gordon's College, which many pharmaccutical students attend. Local men should apply to Mr. Alexander Strachan for particulars. We hear that the Aberdeen School of Pharmacy has done good work during the past year. Mr. George Cowie, of the Royal Infirmary, is the teacher, and will give information.

BIRMINGHAM.

The classes arranged by the Midlard Counties Chemists Association not having been well supported during the past few years, it is probable that they will not be resumed. Mr. K. H. Alcock, F.I.C., F.C.S., Temple Chambers, Broad Street Corner, receives private pupils for instruction in all the subjects of the Minor and Major. In addition to the facilities provided in the Mason College for the study of science, we may note that in the Municipal Technical School, Paradise Street, there will during the incoming winter be a special course of lectures for the chemical trades. For particulars apply to Mr. A. Hayes, the secretary.

BRIGHTON.

There is ample accommodation for young pharmacists to study at the local school of science and art, where lectures are given through the winter on chemistry and botany.

DUNDEE.

There is no regularly organised pharmacy school here, although there are exceptional opportunities for study in almost every branch of technical and scientific education. At the University College courses of instruction may be had under Professor Percy Frankland in chemistry, and by Professor Geddes in botany. The various evening classes are chiefly taken advantage of by local pharmacy students. The fees are cheap—5s. for the first and 2. 6d. for each additional subject. At the Technical Institute the students have the use of the University College chemical laboratory for practical work. The Y.M.C.A. chemistry classes have always been popular. They are now conducted by a local pharmacist—Mr. J. B. Masor, F.C.S. The lecture hours are: Elementary: Fridays, 830 to 930 P.M.; advanced: Tuesdays, 830 to 9.45 P.M., the practical time being arranged to suit students. Botany will be taken np at the Y.M.C.A., by Mr. Alex. Meek, B.Sc. At the Morgan Academy. Mr. W. G. Smith, B.Sc., has evening classes in botany, on Thursdays, hetween 7 and 10. Classes bave just been resumed in connection with the Assistants' Association. Botany is taught on Tuesday evenings, at 9.15, by Mr. Smith, and pharmacy and materia medica at the same hour on Friday, by Mr. William Mair, in the association's premises at 74 Commercial Street, Dundee. These are chiefly intended as preparatory to a course in a school of pharmacy.

EDINBURGH.

Mr. William Duncan, Royal Dispensary, West Richmond Street, is a popular "coach," and has day and evening classes, which are held in the class-rooms and laboratories of the dispensary. Instruction is given for the Minor and Major. There are ample facilities in Edinburgh for instruction in the sciences, the Heriot-Watt College, Chambers Street, offering special advantages and sound instruction at cheap rates. Pharmaceutical students who apply to Mr. J. R. Hill, 36 York Place, may obtain particulars of university and college classes which are open to them at reduced fees.

GLASGOW.

This city is well provided with science classes, brief particulars of which are given under "Scientific." At the Glasgow School of Pharmacy, 180 West Regent Street, Dr. David Lees has Minor classes on Mondays and Thursdays, at 9.30 p. M., for jnnior students, the course lasting six months, for 2l. 12s. 6d. Also senior classes, to meet by arrangement, and private tuition. Evening science classes are held at the Technical College.

LEICESTER.

Mr. S. F. Burford, Halford Street, secretary of the Leicester and Leicestershire Chemists' Association, informs not that the

arrangements for the winter session have not been concluded, as the trustees of the Technical School have made arrangements with the Science and Art Department, and are no longer able to allow the association the use of their laboratory. Classes for chemistry and pharmacy are pretty sure to be held. There is no extra charge to the students beyond their subscriptions to the association. Last summer Mr. Lewis Ough, F.C.3, conducted a successful botany class. For those who have not passed the Preliminary examination a class will be conducted by Mr. T. W. Krowkes.

NEWCASTLE-ON-TYNE.

Local students may attend the classes at the Durham College of Science.

NOTTING HAM.

The local Chemists' Association have again arranged with the Nottingham University authorities for a special course of training for pharmaceutical students, commencing on October 5. The course for the Minir entails work for three winter sessions, and is well adapted for assistants in the town and neighbourhood. The classes to be held during the ensuing session are: Pharmaceutical chemistry and laboratory-work, Tuesdays, 8 P.M.; fee 21s. This course extends from October 5 to April 8. From April 25 to July 2 a course on elementary organic chemistry will be given on Thursdays, fee 7s. 6d.; and on the same days, at 8.30 P.M., from April to July, there will be a course on materia medica if a sufficient number enter; fee 15s. Next session dispensing and boteny will be taught. For further particulars apply to Mr. W. Gill, 207 Radford Road.

SHEFFIELD.

The classes of the local chemists' association resume at the rooms, New Surrey Street, on October 19, 1891. The botany class is held on Mondays at 8.15 P.M. (lecturer, Mr. John Humphrey); chemistry, Thursdays, 6.30 P.M. (Mr. J. H. Worrall); practical chemistry, Thursdays, 7.30 to 9.30 P.M. (Mr. J. H. Worrall); materia medica, Fridays, 8.15 P.M. (Mr. John Humphrey). The fee for each class is 11. 1s. Additional laboratory practice, at extra fee of 10s. 6d. Special attention given to examination students by arrangement with lecturers. Further particulars from the school secretary, New Surrey Street.

POSTAL INSTRUCTION.

In spite of all that is done to bring education to everyone's door, there are towns and villages in the kingdom where students are to be found who find themselves without personal aid and advice in the prosecution of their studies. For the guidance of such we can commend the system of instruction by post. The object of the system is primarily to arrange the course of reading which the student pursues; and, while this is important, it is as important for a lad to feel that some one with experience is supervising his work. The postal system is as sympathetic in this as anything postal can be, and many have cause to thank it for rousing them to action when all the tendency with them was to be lethargic. The following are brief notes on the plans which have come under our notice:—

The Westminster College of Pharmacy has three divisions in its system, and the fees are $10s.\ 6d.$ for the Preliminary, $1l.\ 1s.$ for the Miner, and $10s.\ 6d.$ for the Major. All the subjects are included, and in each division one or more lectures, according to the time the student has at his disposal, are sent weekly or f.rtnightly, on Mondays. The lectures are studied (it is best to copy the notes when that seems desirable), and the originals returned on or before the following Monday morning. Minor students receive autograph prescriptions to read, difficult ones to dispense, and powders for analysis. Major students also receive compound powders for analysis, but 2s. per dozen is charged, this including the correction of reports.

Mr. John Tully, of Hastings, has "junior" and "scnior" courses for the Minor. In both cases lessons are provided weekly, and the student's progress is tested periodically. I'ee, 21s. Similarly, instruction is given for the Preliminary; fee, 10s. 6d. per quarter.

Mr. Filtness, chemist, Tunbridge Wells, also offers to advise students by post.

Mr. J. E. Bonn, Brading, I.W., has a self-education course

for the Preliminary, of which full particulars are given in his prospectus. The fee is 25s. for thirteen lessons.

APOTHECARIES' ASSISTANTS' CERTIFICATE.

An examination for a certificate of qualification to act as an assistant in compounding and dispensing medicines is held on the fourth Wednesday of every month at 2 o'clock r.m. Candidates intending to offer themselves for examination are required to give notice, and to pay the fee, 2l. 2s., seven days previously. The examination is in the following subjects:—(1) Translating prescriptions, (2) the British Pharmacopæia, (3) materia medica and botany, (4) pharmaceutical chemistry, and (5) pharmacy and dispensing. In the event of failure, a candidate cannot be re-admitted under three months. The fee for re-examination is 1l. 1s. The secretary to the Court of Examiners is Mr. C. E. Armand Semple, B.A., M.B., Cantab., Apothecaries' Ilall, Blackfriars, E.C.

IRELAND.

Broadly speaking, there are two classes of persons engaged in the drug trade in Ireland, viz.:—

(1) Those entitled to keep open shop for the sale, retailing, or mixing of poisons, but not entitled to compound medical prescriptions. Such persons are chemists and druggists in business before 1875, and registered under the Amendment Act of 1890, and registered druggists, who have passed the examination provided by that Act. Some of the latter are entitled to call themselves "chemists and druggists."

(2) Those entitled to keep open shop for the retailing, dispensing, or compounding of poisons or medical prescriptions. These are registered pharmacentical chemists.

Dealing with the former class first, we need only refer to the regulations to be observed by those who can only become registered druggists by examination. For such there is an examination, under the eighth section of the Act, those admitted being persons who have served for four years as apprentices or assistants with pharmaceutical chemists, apothecaries, chemists and druggists, or registered druggists. The subjects of the examination are:—

- (1) English orthography and composition.
- (2) Arithmetic and the weights and measures of the British Pharmacopæia.
- (3) Appearance and properties of the various drugs and chemicals in general use.
- (4) The Sale of Poisons Act (Ireland), 1870.

The examination is held in Dublin on the first Thursdays of March, June. September, and December; and also, at an early subsequent date, at other centres if twelve candidates from such centres make application to be examined there. The fee for the examination is 41. 4s., and candidates for it are required to send in two declarations (on forms to be obtained from Mr. A. T. Ferrall, Dublin: they set forth that the applicant has completed four years' apprenticeship, or assistantship, and the fact is testified to by the employer). fourteen clear days before the stated meetings for examination, of their desire to be examined, accompanied by a receipt from the Bank of Ireland of having lodged the 4l. 4s. fee to the credit of the Society. In the event of a candidate failing to pass, he can be examined again after six months on payment of half a guinea to "each examiner"—i.e., to the examiner who examines him. An account of the examination will be found in THE CHEMIST AND DRUGGIST of August 1, 1891. The conditions under which the title

PHAMACEUTICAL CHEMIST, OR L.P.S.I.,

is granted are:-

(1) The candidate shall pass the Preliminary examination.
(2) If he has done this before January 1, 1884, he must show (a) that he has been engaged two years in compounding or dispensing prescriptions in the establishment of a pharmaceutical chemist (Ireland or Great Britain), registered chemist and druggist (Great Britain), or apothecary; or (b) if he has passed the Preliminary since January 1, 1884, he must show that he has been so engaged for four years (provision being made in the case of the four years being passed in more than one establishment); or (c) if the candidate

has served a four years' apprenticeship or assistantship to a chemist and druggist or registered druggist (Ireland), he must show that he has served as an assistant for two years with a pharmaceutical chemist or licentiate of the Apothecaries' Hall keeping open shop; and

(3) Pass the Licence examination, of which particulars

are given helow.

PRELIMINARY EXAMINATION.

This examination is held at Dublin on the first Mondays of January, April, July, and Oetoher, at 11 o'clock. Candidates must he at least 16 years of age, pay the fee of 21.2s. into the Bank of Ireland, to the credit of the Pharmaceutical Society, and forward the receipt, with name and address in full, age last hirthday, and (after next month) mentioning the optional subject which they will take, at least seven days before the examination is held. The examination to be held next month is in Latin, English, arithmetic, elementary chemistry, hotany, and physics, on the old lines, but the following new regulation will come into force on January 1, 1892.

Latin: To translate into Euglish, and parse, sentences from a Latin author:—Casar's "Commentaries," First Book; or Virgil's "Eneid," First Book.

English: English grammar, including orthography and parsing. To write on a subject selected by the examiner; and to write from dictation. Arithmetic: The first four rules, simple proportion, vulgar fractions, and decimals. To describe the British weights and measures, and the metric system.

Algebra: As far as simple equations, inclusive. Geometry: Including the first Book of Euclid.

The candidate must pass in one, at least, of the following optional subjects:—

Elementary Physics and Mechanics: Sound, light, and heat, as given in Gauot's "Elementary Course of Natural Philosophy," mechanics of solids and fluids, comprising the elements of statics, dynamics, and hydrostatics.

The Rudiments of Botauy: Oliver's "Lessons in Elementary Botany," part 1.

Elementary Chemistry: As included in Roscoe's "Lessons in Elementary Chemistry," chapters 1 to 13 inclusive.

Freuch, German, or any modern lauguage.

In each of the following subjects a candidate must obtain 50 per cent., viz.—(1) English, (2) arithmetic, (3) the British and metrical systems of weights and measures—and 40 per cent. on the entire course, to enable him to pass. No candidate will he allowed to pass should he not obtain 20 per cent. in each of the other compulsory subjects. In awarding marks, spelling and the quality of the handwriting are taken into account.

In the event of failure, candidates can he re-examined at the expiration of six months, on the payment of the examiners' fees. Certificates of any of the examinations approved by the General Medical Council are accepted in lien of the examination.

LICENCE EXAMINATION.

This examination is held in Duhlin on the first Wednesday and two following days of January, April, July, and October, at eleven o'clock. Candidates must he 21 years of age, and have passed the Preliminary at least a year previously. The fce is 5l. 5s., and is to be paid into the Bank of Ireland to the credit of the Society. Before a candidate can enter for the examination he must be able to show that he has attended a course of practical chemistry of not less than three mouths' duration (100 clear hours at the hench), or on the part of certificates dated prior to July 1, 1888, three-fourths of the course, in the laboratory of one of the following institutions, viz.:—

Pharmaceutical Society of Ireland School of Chemistry and Practical Pharmacy.

Cecilia Street School of Mellcine, Dublin.

City of Dublin Technical Schoois.

City School of Chemistry and Pharmacy, Chancery Lane, London, W.C.

Government School of Science, South Kensington,

Queen's College, Belfast.

Queen's College, Cork.

Queen's College, Gaiway.

Royai College of Science for Ircland, Dublin,

Royal College of Surgeons in Ireland, Dubl n. Working Men's Institate, Belfast (Chemical School). Trinity College, Dublin.

A certificate of having attended a course of materia medica in these institutions is also recommended. In making application (at least fourteen days before the date of the examination) to Mr. Ferrall, certificates attesting to all the foregoing conditions have to be sent to him. The subjects of examination are:—

Botany: To recognise the principal indigenous plants used in medicine, to refer them to their natural orders, and to give the definitions and the distinctive characters of their soveral parts,

Materia Medica: To recognise specimens of the drugs of the Pharmacopogia, to describe their characters and active principles, name the sources from which they are obtained, and the official preparations into which they enter; and to detect adulterations.

General and Pharmaceutical Chemistry: The elementary laws of chemistry and physics, including chemical equations. To recognise the chemical substances of the Pharmacopeia; to describe the processes by which they are obtained; qualitative analysis (including the tests of the Pharmacopeia) and volumetric analysis; and to submit to a practical examination in these subjects.

Practical Pharmacy: To translate Latia prescriptions; to detect dangerous doses; to compound and dispense correctly. To explain the processes of making the non-chemical preparations of the Pharmacopecia, and to recogise them; and to have an intimate knowledge of the Sale of Poisons (Ireland) Act, 33 & 34 Vict., chap. 26, 1870.

THE SOCIETY'S SCHOOL

of Practical and Theoretical Chemistry Class is under the direction of Professor Tichborne, LL.D., assisted by Mr. P. Kelly, M.P.S.I., as demonstrator, and is open on Mondays, Wednesdays, and Fridays, from 8 to 10 p.m. The teaching in the school is consistent with the requirements of the Board of Examiners, but branches of practical chemical knowledge are brought in which are useful to the pharmacist. The fee for the course is 6l. 6s. A special class for general instruction in pharmacy, materia medica, and botany is conducted hy Mr. Kelly. For fuller particulars regarding the classes, and all other matters relating to the Society, apply to Mr. A. T. Ferrall, Registrar, 67 Lower Mount Street, Dnhlin.

APOTHECARIES' HALL CERTIFICATE.

The certificate of assistant is granted to persons not less than 16 years of age, who have spent two years at practical pharmacy under the superintendence of a duly registered apothecary or pharmaceutical chemist. The examination for the certificate of assistant is held on the first and last Fridays in each month (with the exception of the month of August). at the Apothecaries' Hall, in Mary Street, Dublin, at 2 o'clock P.M., and embraces the subjects of pharmacy, practical and theoretical, materia medica, the British Pharmacopæia, and the correct translation and compounding of medical prescriptions. Fee, 1l. 7s.

HONOURS IN PHARMACY.

We have not thought it necessary to mention that in all the chief schools of pharmacy certificates and medals are offered for competition amongst the students, but there are honours of wider interest which demand attention. These exclusively apply to Great Britain; and, first, we may notice

THE BLUE-RIBBON OF PHARMACY.

This is the Pereira medal, which commomorates the lifework of the celebrated pharmacognosist—Jonathan Pereira. This is offered annually by the Pharmaceutical Society to all persons who have passed the Major examination during the year preceding and including the July examinations, and who at the time were associated with the Pharmacentical Society. A written examination in botany, materia medica, and chemistry is held in Edinhurgh and London of those who desire to compete. The examination is practically on the lines of the Major, but it is generally calculated to bring out the knowledge which the competitors have acquired by personal work and from current literature, apart from textbooks. We published on August 8 the questions set at this year's examination. The prizes are:—

First.—Pereira medal in silver, and books value 57. Second.—Pharmaceutical Society's silver medal, and hooks

Third.—Pharmaceutical Society's bronze medal, and books value 21.

SCHOLARSHIPS.

The Pharmaceutical Society offers four scholarships for competition by examination held on the second Tuesday of July overy year at the Preliminary examination contros, and at the same time as that examination. The subjects of the examination are as follows, and to them we add the titles of suitable books:—

- (1) Latin: Virgil, the first three books of the "Æneid"; Latin prescriptions: translations of Latin into English and English into Latin; translations from any Latin Pharmacopela; and parsing. [The series of Virgil recommended under the Preliminary, or the translations of the "Æneid" published by W. B. Clive & Co., 1s. cach book. Percira's "Selecta è Prescriptis," or Lace's "Latin Grammar of Pharmacy."]

 (2) French or German. [Macmillan's "Progressive French Readers,"
- (2) French or German. [Macmillan's "Progressive French Readers," 2s. 6d. each; the similar books for German, or, preferably, Otto's "Grammar."]
 - (3) English composition and parsing. [See Preliminary.]
- (4) Arithmetic: the first four simple and compound rules, fractions and decimals; the British and metrical systems of weights and measures. [See Preliminary.]
- (5) Elementary ehemistry, pharmacy, and botany. [Wilson's "Chemistry" (Chambers, 3s. 6d.), or any of the standard elementary books on inorganic chemistry; Bilfour's "Elements of Botany" (Black, 3s. 6d.), or Bentley's little book (S.P.C.K., 1s.), British Pharmacopæia, and "The Art of Dispensing."]

The titles and value of the scholarships are as follows:—

Bell Scholarships (two).—Value 30l. a year, in two payments, and free education in the Society's school, with books to the value of 2l. 10s., and the necessary chemical apparatus.

Redwood Scholarship.—Value 20l., which the holder is to

spend for instruction in the Society's school.

These scholarships are open to persons who are subscribing students or apprentices of the Society, between 20 and 22 years of age, who have served three years with a pharmaceutical chemist or chemist and druggist.

Manchester Pharmaceutical Association Scholarship.—Value about 301. The money is to be expended for instruction in the Society's school, or in a provincial school of pharmacy selected by the scholar and approved by the Council of the

Society.

Candidates for this scholarship must be snbscribing apprentices or students of the Society (not Bell or Redwood scholars), of not less than 19 nor more than 21 years of age on the day on which the examination is held, and they must have served three years in the pharmacy of a registered pharmaceutical chemist or chemist and druggist in Lancashire, Cheshire, or the High Peak Parliamentary Division of Derbyshire.

High Peak Parliamentary Division of Derbyshire.
Persons desiring to compete for any of these scholarships must send notice to Mr. Bremridge, 17 Bloomsbury Square, London, W.C., on or before the first day of Jnne, accompanied by certificates of age, and testimonials from their employers or masters, as to capability, industry, and general

conduct.

HERBARIUM PRIZE.

Offered by the Pharmaceutical Society for the most carefully selected herbarinm of not less than 150 phanerogamons plants and ferns collected by a subscribing student or apprentice of the Society in any part of the United Kingdom between the first day of Jannary in one year and the first day of July in the year following, arranged according to the natural system adopted in some book on British botany. A silver medal, as well as a bronze medal and certificates of honour, are offered, if the collections are of the requisite standard. Competitors must be under 21, and must forward their collections to Mr. Bremridge before July 1, 1892, with certain declarations, particulars of which may be obtained from him.

OTHER PRIZES.

Once a month THE CHEMIST AND DRUGGIST offers prizes to students for qualitative analysis. A report of this month's competition appears in this issue. This is an excellent means for students testing their progress, and we allow all engaged in pharmacy to compete.

MEDICAL.

PHARMACY and medicino are closely associated, yet not united. The one stands at the head of the shopkeeping callings as a trading craft, with a sufficient degree of culturo about it to give it a professional air; the other is a profession whose nobility is only jeopardised by the personal shortcomings and commercialism of some of its votaries.

The medical profession will always have a certain fascination for those who have experience in pharmacy. It is the higher degree of development, pharmaceutical knowledge being the best foundation for medical training. It is the modern analogue of the almost extinct medical apprenticeship.

And to many of the youth of the lay community medicine is as fascinating as it is to the youthful pharmacist. It offers, for a pecuniary investment, meagre in comparison to the capital required for extensive commercial enterprise, a position in society which is often denied to the wealthy merchant, while in cultured circles the man of medicine takes his place naturally in virtue of his education and social responsibilities. Pharmacists, as such, have no place there; yet many have the aspirations.

PRELIMINARY REQUIREMENTS.

We are concerned in the meantime, however, with the early training of the medical man, rather than with the snccessful practitioner, and it is proper to snmmarise the qualifications demanded of the candidate for registration as a practitioner, and the ontlay involved before he reaches the borders of active work.

It goes without saying that the man of exceptional ability, whose brain is cast in the true medical monld, will stride through the curriculum to a front rank in practice. Regulations are not made for such men. For genins there is no law, and, happily, none is made for it. The regulations which have been formulated by the General Medical Council predicate average mental ability—a sound education, comprising the three R's, as elementary schools have them; a knowledge of classics, as far as Latin authors go; some reasoning power, as shown in a knowledge of mathematics, and, in some cases, of logic; a slight knowledge of natural phenomena and of a modern langnage. All this is no more than we can expect a man of great social possibilities to possess, and it is right that the authorities should insist that the medical student shall prove that he has this preliminary knowledge before his professional studies are recognised.

PASS EARLY.

Let it be nnderstood, then, to begin with, that it is advisable and proper to pass the Preliminary examination before entering a medical college. Those who have been trained in pharmacy, and who pass the pharmaceutical Preliminary examinations, or the British Minor, before the end of this year, have the privilege of getting recognition for these qualifications. They have only to pass examinations in the remaining subjects of the medical preliminary in order to complete the requirements for registration as medical students.

Thns, in the case of students who have passed the Preliminary examination of the Pharmaceutical Society of Great Britain, we have it from the College of Preceptors that they will permit them to take the remainder of the subjects at the College examination—viz, algebra, Enclid, mechanics, and one of the optional subjects. If the student is a Minor man, his certificate exempts him from the optional subject. Several medical bodies agree to admit pharmaccutical students to their preliminary on the same terms as the College of Preceptors; but it must not be supposed that all do, for most of the universities have a preliminary examination of their own, which they insist upon all students passing. Their standard is higher than that of the Medical Council. The Irish pharmaceutical Preliminary examination is of equal value to the British Preliminary and Minor, so

far as exemption is concerned. The exemption ceases on December 31 for thos; who pass after the present year.

Those who are entitled to exemption, and wish to take advantage of it, should consider what qualification they will seek-a licence or a degree.

WHICH WILL IT BE?

All the licensing bodies accept the fact that a person is registered as a medical student as proof of his educational attainments. It follows, therefore, that if a pharmaceutical student satisfies the Medical Council, he will satisfy the

Some universities admit students to their examinations for degrees on evidence of registration, and passing one or more additional subjects-with residence, of course. This is the

case in Edinburgh and Durham, for example.

Cambridge, Dublin, London, and Oxford are amongst the universities which insist upon all students passing a specific

preliminary examination.

It follows from the foregoing that a licence offers the easiest procedure to a pharmaceutical student; then come some of the universities. We advise all students to whom this point is of personal interest to get copies of the regulations of the particular body from which they wish to take their qualification, and satisfy themselves as to the preliminaries they must adopt. It is not possible to deal with each

body in detail in the space at our disposal.

At this stage the wisdom of young lads who enter pharmacy passing an examination of higher standing than the pharmaceutical Preliminary is accentuated. For those who are not connected with pharmacy the procedure is uncomplicated: they simply have to pass an examination recognised by the Medical Conneil (see list, p. 431). The next step for all is to enter a medical college, then make application to the Medical Council for registration as a medical student. is necessary, as the curriculum only dates from registra-

LICENCE OR DEGREE?

The one can be got as cheaply as the other, and the circumstances of the student, residential and pecuniary, must determine his decision. The Londou student has little choice in the matter, only the exceptional men cau take the medical degrees of the London University, hence all, or nearly all, go in for the apothecaries' licence or the double qualification of the Royal Colleges. There is no question that in London there are better opportunities for practical training than in any other educational centre; but that feature, with a mere licence, does not satisfy all aspirations. The long-headed ones want a degree, and the London one is too difficult for them. Pending the establishment of the Teaching University for London, we would say to those who live in London, and who will have a degree, Stay where you are; get all that you can out of the London schools and hospitals, then complete (or vice versa) the curriculum for a degree in Durham, Edinburgh, or any other university which admits to degrees under those conditions.

Provincial men who live near a university town will find it most expeditious to take the curriculum there. This especially applies to chemists' assistants in such towns who are permitted to attend the classes while holding their situations. Such men are fortunate. They can qualify at a cost of from 80l. to 150l. It is obvious that if a student has to leave home in order to attend classes, cost of living has to be reckoned on, and that brings us to the whole question of

THE COST.

Those who begin their medical studies before January 1, 1892, have to undergo a corriculum of four years' duration, after that date five years. The fifth year is to be spent in clinical work, and will add 201. or more, to the cost of education, apart from the cost of living. As the first two years of the curriculum take np only on an average of four hours' time per day, it is quite possible for a chemist's assistant to make a fair start while he holds a situation. This is done in Aberdeen, Belfast, Cork, Dublin, Edinhurgh, Glasgow, Leeds, Liverpool, Manchester, and Newcastle, and hy extending the chriculum, ic, taking only two classes or so per session, it is possible to get through the whole of the study under these conditions. By all means do this if you can. The hulk of students, however, have to reckon with no

remunerative employment during their studentship, and what they have to face is expense such as the following, which we base upon residence in Edinburgh-an average place in respect to cost of living and education :-

		C
Class and graduation fees		120
Extra subjects and totorful work, say		20
Books and Instruments		30
Board and lodging, four years		160
Personal and travelling expenses		80
Total	••	£410

We assume that the student stays at home during vacations, and allow nothing in respect of these periods. should we forget to state that many a good man is content with a 5s. room and a red-herring breakfast; but the average medical student enjoys life, and finds it concomitantly costly. Many cannot come within touch of our figures; in fact, the manner in which a youth has been brought up mainly determines the cost of keeping him at a medical college. The fifth year's study will add another 70l, to 100l. to the cost.

Affluent men will go to Cambridge or Oxford, spend 250%. to 400l. a year, and come ont with a degree which carries weight every where.

HOW THE TIME IS SPENT.

A word as to the course of studies. In the first year the time is not fully occupied in class work, but the student being fresh has to devote a good deal of time to private reading, and towards the end of the year reads hard for the first professional examination. He gets rid of the physical sciences at this period, and has commenced to analyse the human frame. Anatomy comes in with all its preliminary horrors the second year, and with correlated subjects occupies attention until the second professional examination is passed, at the end of the third year. Meanwhile, the studeut has become a familiar object in the hospital wards; he speaks glibly of "cases," has viewed and assisted as dresser in many an amputation and delicate operation; then, in his fourth year, he flonrishes a stethescope, and presides at the advent into the world of a dozen or two poverty-stricken bits of humanity. His class-work has become purely professional; he may still take an hour or two now and then in the dissecting-room, visit dispensaries, and, if he is a wise man, make a hobby of the ear, the eye, the throat, the bladder, or anything else there is fame and money in. If he is fortunate in getting his qualification at the end of the regulation forty-five months, he may have a little more cash and time to spare, and that he may spend in hospital and special class-room. In the hospital, or in a private practice, he certainly must if he come under the new regulations.

WHAT FOLLOWS?

Such is the career of the medical student. He may leave his alma mater heaped with honours, or may only have managed to "scrape through." In either case he has now to begin a new career—everything, from the direct poverty of an East London dispensary, on which we would be the last to cast a slur, to the 10,000l. to 20,000l. a year of the West end practitioner, is before him. His purse or his temerity is responsible if he makes straight aim at Harley Street. A family practice is better to begin with. As an assistant, he can get here valuable experience and 100l. to 150l. a year. It is a good opportunity to get well grounded in the ailments of everyday life: hospital practice is a little special. Still he may keep up his interest in any special hranch of medicinc or surgery; he has time to acquaint himself with the work of great men in his pet department, and mayhap he will establish a reputation for himself that will carry him on to comparative comfort-ergo a brougham.

We have given 4107, as the average cost of training, and that figure we repeat as the average annual income of the family physician. When a man has attained that he works hard for the money. He must he always ready to respond to a call—'tis only the mean men of the profession who think first of the fee-and his own life he ranks only second

to his patient's.

It is noble if nobly done. That is a part of the reckon-

ing which one may, with becoming modesty, add to the column which totals up success in the medical profession.

REGULATIONS OF THE GENERAL MEDICAL COUNCIL.

The Council has resolved that no person shall be allowed to be registered as a medical student unless he chall have previously passed (at one or more examinations) a preliminary examination in the subjects of general education as specified below. The subjects in the first column are those at present in force; those in the second column will shortly replace them:—

Now required.

- (1) English language, including grammar and composition.
- (2) Latin, Including grammar, translation from specified authors, and translation of casy passages not taken from such authors.
- (3) Elements of mathematics, comprising (a) arithmetic, including vulgar and decimal fractions, (b) algebra, including simple equations, (c) geometry, including the first book of Euclid, with easy questions on the subject-matter of the same.
- (4) Elementary mechanics of solids and finids, comprising the elements of statics, dynamics, and hydrostatics.
- (5) One of the following optional subjects:—
 - (a) Greek, (b) French, (c) German, (d) Italian, (e) any other modern language, (f) logic, (g) botany, (h) zoology, (i) elementary chemistry.

Required after Jan. 1, 1892.

- (a) English language, including grammar and composition.
- (b) Latin, including gramma*, translation from specified authors, and translation of easy passages not taken from such authors.
- (c) Mathematics, comprising (a) nrithmetic, (b) algebra, as far as simple equations, inclusive; (c) geometry, the subject-matter of Euclid, Books I., II., and III., with easy deductions.
- (d) One of the following optional subjects:—
 - (α) Greek, (β) Fronch, (γ) German, (δ) Italian, (ε) any other molern language, (ζ) logic.

It must be distinctly understood that the Conneil itself does not conduct an examination. It simply accepts the certificates of the bodies mentioned on page 431, excepting after January 1, 1892, those noted, and in future the Council will not accept any certificate of pass in a preliminary examination, unless the whole of the subjects included in the preliminary examination required by the Council for registration of students of medicine have been passed at the same time; but this rule will not apply to those who, previous to January 1, 1892, have passed a part of any preliminary examination recognised by the Connoil. A university examination required for graduation in arts, wherein the specified subjects are included, may at any time be recognised for the purpose of registration. For the benefit of pharmaceutical students we have obtained from the General Medical Council the following clear statement of fact regarding the incidence of the regulations at present in force :-

Any examination at present recognised by the Council, or recognised pro tanto, such examination ceasing to be recognised on and after January 1, 1892, will always be accepted pro tanto—e.g., the Pharmacentical Preliminary will be accepted pro tanto after January 1, 1892, provided always that it bears a date on or before December 31, 1891.

It follows from this that what pharmaceutical students who are within the exemption have to do is to pass in mathematics b and c, and one of the optional subjects. When they wish to do this they should communicate with the secretaries of the following in regard to passing the remaining subjects:—

The College of Preceptors, Bloomsbury Square, London, W.C.; Society of Apothecaries, Blackfriars, London, E.C.

Educational Institute of Sectland, Edinburgh R. Coile. Phys. and Sarg., 47 Dawson Street, Dablin. Or they may address the secretary of any medical echool in their neighbourhood.

COLONIAL AND OTHER ACCEPTANCES.

In addition to the certificates mentioned on page 431, the Medical Council also accepts the entrance or matriculation examination certificates of the following:—

Universitics of Calcutta, Madras, Bombay; Ceylon Medical College; M'Gill College, Montreal, and Bishop's College, Montreal; Toronto, and Trinity College, Toronto; Queen's College, Kingston; and also of Victoria College, Upper Canada, College of Physicians and Surgeons of Ontario, Western University of Ontario; University of Manitoba; Fredericton, New Brunswick; Mount Allison College, New Brunewick; King's College, Nova Scotia; Halifax, Nova Scotia; Dalhousie College and University, Halifax, Nova Scotia; Provincial Medical Board of Nova Scotia; University of California (not after January 1, 1892); Universities of Melbourne, Sydney, Adelaide (public examinations), Cape of Good Hope, Otago, and New Zealand. The A.A. degree of Tasmanian Council of Education; voluntary examinatione of Christ's College, Canterbury, N.Z.; two years' English certificate of Codrington College, Barbadoes; Gymnasial Abiturienten-Examen, and other corresponding entrance examinations to German and other Continental universities.

This liet is undergoing revision.

REGISTRATION AS MEDICAL STUDENT.

The commencement of the course of professional study recognised by any of the qualifying bodies shall not be reckoned as dating carlier than fifteen days before the date of registration.

No medical student shall be registered until he has passed a preliminary examination, as required by the General Medical Council, and has produced evidence that he has commenced medical study.

We give these important regulations in the official language. It costs nothing to be registered. All that the student has to do is to apply to either of the following (according to the kingdom he residee in) for a form of application, fill that up, and return it:—

W. J. C. Miller, B.A., Registrar of the General Medical Conneil and of the Branch Medical Council for England, Medical Council Office, 299 Oxford Street, London, W.

James Robertson, Registrar of the Branch Council for Scotland, 1 George Square, Edinburgh.

R. L. Heard, M.D., Registrar of the Branch Council for Ireland, 35 Dawson Street, Dublin.

THE CURRICULUM.

All who commence their studies on and after January 1, 1892, must devote five years to professional studies before they can be registered as medical practitioners. Again quoting the official language:—

The first four of the five years should be passed at a school or schools of medicine recognised by any of the licensing bodies mentioned in Schedule A of the Medical Act (1853), provided that the first year may be passed at a university or teaching institution recognised by any of the licensing bodies, where the subjects of physics, chemistry, and biology are taught.

Graduates in Arts or Science of any university recognised by the Medical Council, who shall have spent a year in the study of physics, chemistry, and biology, and have passed an examination in these subjects for the degrees in question, should be held to have completed the first of the five years of medical study.

The fifth year should be devoted to clinical work at one or more of such public hospitals or dispensaries, British or foreign, as may be recognised by any of the medical authorities mentioned in schedule (A) of the Medical Act (1853), provided that of this year six months may be passed as a pupil to n registered practitioner holding a public appointment or possessing such opportunities of imparting practical knowledge as shall be satisfactory to the medical authorities.

In every course of professional study and examinations the following subjects must be cootained:—(1) Physics, lucluding the elementary mechanics of solids and fluids, and the rudiments of hoat, light, and electricity; (ii) chemistry, including the principles of the science and the details which bear on the study of medicine; (iii) elementary biology; (Iv) anatomy; (v) physiology; (vi) materia medica and pharmacy; (vii) pathology; (viil) therapeutics; (ix) medicine, including medical anatomy and clinical medicine; (x) surgery, including surgical anatomy and clinical surgery; (xi) midwifery, including diseases peculiar to women and to new-born children; (xii) theory and practice of vaccination; (xiii) forensic medicine; (xiv) hygicae; (xv) mental disease.

Anyone who merely commences studies this year, and so euoceede in registering himself as a medical student, is exempt from the fifth year's study, although he puts off regular study for a long time.

THE CHEMIST

THE PROFESSIONAL EXAMINATIONS

are arranged as follows:-

The eximination in the elements of physics (including mechanics), chemistry, and biology, should be passed before the beginning of the second winter session.

Antecedent to the Final examination there should be three professional examinations, urranged in such manner as to secure due continuity and sequence of study.

All examinations, except the Final examination in medicine, surgery, and milwifery, should be passed before the flux year latended for clinical work.

The Final examination in medicine, surgery, and midwifery must not be massed before the close of the fifth year of medical study.

All hodies empowered to grant registrable degrees, diplomas, and licences must conform to the regulations of the Council. The information which follows applies in all cases to those who come under the four years' curriculum. Regulations for the five years' course have not yet been issued by the qualifying hodies.

MEDICAL DEGREES.

UNIVERSITY OF LONDON.

The M.B. degree of this university is highly valued. As in the case of all the degrees of the university, caudidates (who should he at least 16 years of age) must pass the Matriculation examination in (1) Latiu; (2) one of the following languages: Greek, Freuch, German, Sauskrit, Arahic; (3) the Euglish language, and English history, with the geography relating thereto; (4) mathematics; (5) mechanics; (6) one of the following branches of science: chemistry, heat and light, magnetism and electricity, botany. Full particulars regarding the subjects are given in "Regulations for Matriculation," a copy of which we recommend students to obtain from the Registrar, Burlington Gardens, London, W. The fees for the examination amount to ahout 3l, 2l. of which is paid to the Registrar and the rest to the local examiners. Iu 1892 the examinations will he held iu January at Birmingham, Queen's College; G'asgow, the Training College, New City Road; Leeds, the Yorkshire College; Newcastle-on-Type, the School of Science and Art; Oswestry, the High School; Plymouth, Maunamead School; and Portsmouth, the Grammar School. Iu June at Aberystwith, University College; Birmingham, Queen's College; Bristol, University College; Edinburgh, the Heriot-Watt College; Epsom, the Royal Medical College; Leeds, the Yorkshire College; Liverpool, University College; Manchester, the Owens College; Newcastle-on-Tyne, the School of Science and Art; Nottiugham, University College; Plymouth, Maunamead School; and Sheffield, Firth College.

The next step is for the candidate to pass the *Preliminary Scientific Examination*, regarding which a "regulations" pamphlet is also published. The examination is held on the third Mondays of January and July, and the fee is 5l. The examination is divided into two sections:—(a) chemistry and physics, and (b) general hiology. The subjects of the former are inorganic chemistry (written. practica!, and oral) and experimental physics (acoustics, heat, magnetism, electricity, and optics). The candidate must also pass the examination in general hiology, either at the same or at another time. An examination for honors is also held. Four years must elapse between the date of passing this examination and the final. The university recognises various schools in the United Kingdom, at which the professional studies may be taken, as well as several colonial institutions, the list being given in "Regulatious relating to Degrees in Medicine."

The next step cau be taken when the student is 19 years of age, and has passed two years of professional study which must include dissectious during two sessious, a course of practical chemistry, comprehending the more important processes of general and pharmaceutical chemistry; in applying tests for discovering the adulteration of articles of the materia medica, and the presence and nature of poisous; and in the examination of mineral waters, animal secretions, urinary deposits, calculi, &c.; of having a tended to practical pharmacy, and of having acquired a practical knowledge of the preparation of medicines, as well as tectures on the subjects (three) of the examinations, a list of which, with all particulars, is given in "regulations."

Twenty-one mouths after passing this examination the student may enter for the final, or M.B., examination, producing evidence that he has completed the medical curriculum; the fee for this, as well as for the intermediate examination, is 5l. Apart from class subjects the certificates required for entrance to the final must show that candidates have (a) conducted at least tweuty belours; (b) attended surgical and medical hospital practice during two years (one of them after passing the intermediate examination) and acquired profesency in vaccination. Candidates must also produce certificates of moral character, and he 21 years of age. Those who obtain the M.B. degree may afterwards proceed to the examination M.S.

AND DRUGGIST.

UNIVERSITY OF CAMBRIDGE.

This university grants the degree of MB, which entitles the holder to registration as a medical practitioner. It is stipulated that students must reside in the university during the required portion of each of nine terms; pass the Previous examination, or its equivalent; and pursue medical study for five years. There are three examinations for the degree, the first resembling the London preliminary scientific (MB), and the others correspond with the intermediate and final. The other degrees granted by the university are BC. (Bachelor of Surgery), M.D., and M.C. The fees for the examination are 2l 2s. in each case; but on the whole the degrees are expensive, owing to residence, and only those who are well off can afford to go to Cambridge. The same applies to the degrees of the

UNIVERSITY OF OXFORD.

To obtain MB, Oxon, cand dates must be BA's of the university. The curricula for this and the degree in medicine take up about seven years' attendance at the university. After passing a preliminary and two professional examinations, the degrees B.M. and B.Ch. are conferred upon the graduate. It is not possible to cover the cost of living at the university, and classes and tuition fees during the whole period of the curricula, with much less than 1,500%.

VICTORIA UNIVERSITY.

For the medical degrees of this university attendance at any of the affiliated colleges—Owens College (Manchester), University College (Leeds), and University College (Liverpool)—is recognised. Before proceeding to the degrees of M.B., Ch.B, students must pass the entrance examination in arts, for which the subjects are:—

- 1. English: Dictation, composition, grammar.
- 2. Latin: One prose and one verse book, translation of easy passage at sight, easy composition.
- 3. Pure Mathematics: Arithmetic; Enelid, I.—III., or the subjects thereof; clementary algebra.
- 4. Elementary mech mies (including kinetics and hydrostatics).
- 5, 6. Two of the following [ufter June, 1892, one only]:
 - i. French: One book, translation of easy passages at sight, easy composition.
 - German: One book, translation of easy passages at sight, casy composition.
 - iii. Greek: One book, translation of casy passages at sight.
 - iv. Pure Mathematics (more advanced): Eacid VI. (Propositions i.-xix. and xxxiii.), or the subjects thereof; algebra (lucinding binomial theorem), plane trigonometry (including the solution of triangles).
 - v. English history and elements of modern political geography.

The following examinatious are accepted in lieu of this:-

- 1. The final examination for graduation in arts of any university in Great Britain and Ireland.
- 2 The Previous examination of the University of Cambridge, provided mechanics has been included.
- 3. Responsions and Moderntious of the University of Oxford, provided mechanics has been included.

And, provided the necessary subjects have heeu included :-

- 4. The Matriculation oxamination of the University of London.
- 5. The Leaving Certificate examination (higher) of the Oxford and Cambridge boards.

The fee for the examination is 1l, and full particulars regarding where it is held, &c., may be obtained from the

Registrar of the University, Manchester. For the medical degrees it is required that, after matriculation, students shall attend four years at the University (after October, 1893, five years), but two of the years may be put in at some other recognised university or medical school. There are three professional examinations for the bachelorships; the first falls at the end of the first year's study, the second at the end of the second year, and the final at the end of the curriculum, when the student has attained his majority. After graduation he may, in due conrse, proceed to the examinations for M.D. and M.Ch.

UNIVERSITY OF DURHAM.

Medical students of this university are required to pass a preliminary examination in arts, to be held on March 29 and September 27, 1892, at Durham. Mr. A. Beanlands, Palace Green, Durham, receives fees (1l. each time) and applications. The subjects of the examination in 1892 will

- 1. English: Dictation, grammar, analysis, composition, and knowledge of Shakespeare's "Coriolanus."
- 2. Geography: British Isles and China and Japan particularly.
- 3. Arithmetic: Shaple and compound rules, vulgar and decimal fractions, practice, proportion, and interest.
- 4. English History: Henry IV. to Richard III.5. Latin: Grammar, Cicero's "Do Sencetute," English into Latin.
- 6. Euclid: Books III. and IV.
- 7. Algebra: Up to and including simp'e equations.
- 8. Elementary Mechanics : Statics, hydrostatics, and pnenmatics.
- 9. Greek: Grammar, Xeuophon's "Anabasis," Book II., and English into Greek.
- 10. French: Grammar, Voitaire'a "Louis XIV.," chap. xiv.-xxiv., and English iato French.
- 11. German: Grammar, Gocthe's "Knabeujahre," and English into German.

Also logic and geometrical optics.

Note.—In the case of languages, easy translations from unspecified authors are given.

The first three subjects must be passed by all candidates, and for registration as a medical student subjects 5, 6, 7, and a modern language must also be passed. The nniversity requires all its medical students to pass in Greek.

Instead of passing this examination the university allows students to proceed to their medical studies if they are already registered on the books of some university granting medical degrees, or of some recognised school of medicine. or if they are already registered as medical students, provided that the certificate includes Greek; if not, that subject alone can be taken at Durham in the examination referred to.

The curriculum for those entering before 1892 extends to four years, one of which must be spent at the College of Medicine, Newcastle-on-Tyne, and the remaining period at any school recognised by the authorised licensing bodies in the United Kingdom. There are three examinations for M.B., but a candidate who has passed the first examination of the Conjoint Board of the Royal Colleges of Physicians, London, and the Surgeons, England, is exempt from the first examination of the university, except in chemistry and botany. Candidates who hold a qualification from a recognised licensing board are required to pass in chemistry and betany. The best course for a London student to pursue in regard to the Durham degree is, after passing the preliminary examination, to take one snmmer and two winter sessions at Newcastle-on-Tyne and finish the curriculum in London. The first and second professional examinations will exempt him from the corresponding examinations for the double English licence. The degree of M.D. is also granted, as well as licences in medicine and surgery.

UNIVERSITY OF EDINBURGH.

The M.B, C.M., degree of this university is very popular with students of all nationalities. All must pass an entrance examination in English (including geography and history), Latin, arithmetic, elements of mathematics and of dynamics, and at least two of the following subjects :- Greek, French, German, higher mathematics, natural philosophy, logic, and moral philosophy. Those who wish to proceed to the M.D. degree must pass in Greek, logic, or moral philosophy, and one other of the optional subjects, Cortain examinations

are accepted pro tanto, but not the Pharmaceutical examinations. A degree in arts in any one of the universities of the United Klngdom, or in one of the Colonial universities, or universities of British India exempts from the preliminary examination. Mathematics must in all cases be equivalent in geometry to at least the first three books of Enclid. No examination of any other Board will be received on any subjects in which candidates have been remitted at this university. The senatus is very particular in regard to students fulfilling the preliminary requirements, and we advise all to carefully study the programme of classes, obtainable from Mr. James Thin, 55 South Bridge, Edinburgh, price 1d. It is provided that a student who has not been able to register as a medical student owing to non-completion of the preliminary examination, and who begins his studies in medicine in summer, may matriculate, and attend the classes of botany and natural history. He must, however, pass a sufficient preliminary examination in October so as to entitle him to be registered at the beginning of the winter session.

Of the fonr years' academic curriculum at least one year must be spent in the Edinburgh University, and, if stndent elects to pass the remainder elsewhere, one of the years must be in a university entitled to give the degree of Doctor in Medicine: in short, two of the fonr years should be spent in the Edinburgh University, and the remainder in the classes of recognised extra-academical teachers. latter include the hospital schools of London, certain classes in the science schools of Aberystwith, Bangor, Birmingham, Bristol, Cardiff, Dublin, London, Nottingham, Oxford, and Sheffield, as well as the School of Medicine, Edinburgh. Generally speaking, the provincial classes qualify for the first professional examination. There are four professional examinations, in writing, vivâ voce, and practical—Firstly, on chemistry, botany, and natural history; secondly, on anatomy, institutes of medicine, materia medica (including practical pharmacy and prescribing), and pathology; thirdly, on surgery, practice of medicine, midwifery, and medical jnrisprudence; fourthly, clinically on medicine and on surgery in an hospital. The M.D. is granted to M.B.'s of two years' standing who submit orginal theses on subjects studied by themselves.

UNIVERSITY OF ABERDEEN.

This university recognises the Pharmaceutical Preliminary examination pro tanto, and candidates holding the certificate for it (dated before January 1, 1892) may take the following subjects at the preliminary examinations to be held at the university on April 14 and 15, 1892, and in October of the same year :-

Elements of Mathematics Geometry: The first three books of Euclid. Algebra as far as, and inclusive of, simple equations.

Elements of Mechanics: Blaikie's "Elements of Dynamics," and two of the following before admission to the first professional examination for the degrees of M.B. and C.M. :-

Greek: Xenophon, "Anabasis," book il.; with grammatical questions.

French: Edmond About's "La Grèce Contemporaine."

German: Berthold Auerbach's "Waldfried."

Higher Mathematics: Euclid, books I. to VI. inclusive. Plane trigonometry, solution of trlangles, quadratic equations, binomial theorem,

Natural Philosophy . (Balfour Stewart's "Elemeatary Physics" recommended).

Natural History: General classification of the animal kingdom; characters and sub-divisions of the vertebrata. (Nicholson's "Advanced Text-Book of Zoology " recommended).

Logic: (Jevons' "Elementary Lessons in Logic" recommended). Moral Philosophy: (Rold's "Activo Powers" recommended).

For the degree of M.D. it is necessary to pass in Greek and in logic or moral philosophy, and in one at least of the following subjects-namely, French, German, higher mathematics, natural philosophy, and natural history. Tho regulations regarding the professional examinations are the same as at the Edinburgh University.

UNIVERSITY OF GLASGOW.

A preliminary examination equivalent in scope to those of the two preceding universities is here enforced, and the

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TURRUUCHS, WELLCOME & CO

The Chemist and Druggist

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SATURDAY, SEPT. 19, 1891.

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EXCHANGE COLUMN ADVERTISEMENTS will appear on page 24 (bottom folio), and mnst be received not later than THURSDAY AT NOON, to appear in the next issue.

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- 4.-£470.-WEST OF ENGLAND.-Good locality; General, Dispensing, and Retail Business; returns last year £470 nearly, with good profits; double-fronted shop and good stock; good house and garden attached; about £300 required.
- 6.—£1,100.—8TAFFS.—Good business town; Retail and Dispensing Business of good class; returns inst year about £1,100; vendor will give a good personal introduction; about £850 required.
- 6.—£450.—HANTS.—Good business towu; Light Retnii and Prescribing Business; returns last year £450; convenient house, good shop, and fairly stocked; about £300 required.

 7.—£800.—HOME COUNTY.—Good town; Retail and Dispensing Business; returns about £800 yearly; double-fronted sbop, and good stock; large and convenient house; good garden, conservatory, &c.; about £800 required.

- 8.—£1,350.— BIRMINGHAM (Suburb).—Retail and good Family Business; returns last year nearly £1,350, with good profits; well-fitted shop, large and convenient; good house attached; about £1,300 required.
- 9.—£533.—EASTERN COUNTIES.—Good town; Dispensing, Retail, and Family Business; returns last year £533; good prices are obtained; corner shop, sitnate in a good position; about one year's returns
- 10.—£700.—KENT (Seaside).—Good-class Dispensing and Retail; established many years; returns £700 yearly, with good profits; large and well-fitted shop, and good stock; about £600 required.
- well-fitted snop, and good stock; should be soon required.

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- convenient bouse; vendor, wishing for immediate safe, with accept \$220.

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- entertained.

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MIDLANDS.—For immediate sale, Retail and Prescribing Business in large village; returning about £700; rent £35; nice house, long garden; owner retiring from retail, will accept £250, which is the value of the stock and fixtures. "Oriza," Office of THE CHEMIST AND DRUGGIST, 42 Cannou Street, E.C.

WEST of England.—Best position in market town; Retail, Dispensing, and Agricultural Business; returns.£1,200 per annum; large, well fitted and stocked shop; good house, large garden; slight opposition; same hands many years; price £600. S.-W., Office of The Chemist AND DRUGGIST, 42 Cannon Street, E.O.

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SITUATIONS OPEN—Continued.

SMART Junior by October 22nd as Third Assistant in a select Dispensing husiness; moderate hours; must be an accurate Dispenser; good writing essential: would sait one just out of good approaticeship. References, salary, age, enclosing carte, to Mr. Browne, Pharmacentical Chemist, Easthourne, Sussex.

QUALIFIED Assistant; indoors; aged about 24; one who has bad 7 or 8 years' experience in good-class Retail and Dispensing business, and can be well recommended. State full particulars as to age, height, and salary required, and give references to two last situations, and enclose photo, G. Brown, Pharmacist, Sandown, Isle of Wight.

ANAGER wanted (with small capital), to take charge of a business in the West of England, with view to Partnership or Succession on easy terms. To save correspondence please state experience, age, if married or not, salary, references, capital at command, and, if possible, enclose photo, to "Radix," Office of THE CHRMIST AND DRUGGIST, 42 Cannon Street, E.O.

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PART-TIME by Junior; London experience. "Student," 40 Grove Road, Bow.

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AS Locum; day, week, or montb. "Minor," 4 Effic Road, Walbam Green, S.W.

JUNIOR, 3½ years' experience; abstainer; London. X., 59 Bridge Road, Battersea.

MPROVER, or Dispenser and Bookkeeper to Surgeon; aged 22. Fawcett, Spilshy, Lincs.

JUNIOR; Mixed Drug; satisfactory reference; disengaged. G., Post Office, Quin, Co. Clare.

TO SURGEONS.—Dispenser, or care of Retail; 14 years' reference. T., 320 Uxbridge Road, W.

A SSISTANT; qualified; aged 28; Prescriber, Extractor. "Statim," 35 Trinity Street, Boro', S.E.

A S Assistant; 21; qualified; 4 years in good retail. Geo. B. Wright, Catherine Street, Doncaster.

OCUM-TENENS; disengaged Sept. 23rd; aged 24; good Extractor. 2 Horton Street, Lewisbam.

MPROVER (20); 4 years' experience; good reference; disengaged.
A. W., 4 Saville Road, Dewsbury.

DISPENSER, Senior, or Locum-tenens; outdoors preferred. J. H., 46 Kingsholm Villas, Gloucester.

A 8 Ontdoor Assistant; 23 years of age; qualified. Apply to Scott New Row, Boro' Bridge, Yorksbire.

BRANCH Manager or Senior; qualified; good experience. "Chemist," Buckmaster, Newington Butts, S.E.

OCUM-TENENS; qualified; experienced; disengaged September 21.
Williams, 49 Artbur Road, Holloway, N.

A S Jnnior; well up in Dispensing and Counter work; Tooth Extractor. "Exalgine," c/o Mr. Allen, Chemist, Wincbester.

JUNIOR; outdoors; September; age 21; 5 years' experience. H. S. M., c,o Bellamy & Wakefield, Chemists, Birmingham.

JUNIOR (21); 5 years' experience; indoors; disengaged Sept. 29tb. A. C., c/o Mr. J. Smithson, 1 Preston Road, Brighton.

ADY desires situation as Dispenser; understands housekeeping; Doctor's reference. Yelland, Ponteshury, Salop.

JUNIOR; 22; outdoors; London or suhurhs; 6½ years' experience; references. G. Wrsy, Old Malton, Malton, Yorks.

SOUTH Coast or Channel Isles.—Junior or Improver; 4 years' experience; 5 ft. 9 in. "Delta," 71 Peel Street, IIuil.

Laboratory.—Wanted, by experienced man, a situation in Steam Laboratory, to manufacture Pharmaceutical Preparations, Essential Oils, &c. "Practical," Office of THE CHEMIST AND DRUGGIST, 42 Cannon Street, E.C.

JUNIOR (21); good references. James, 63 Worcester Street, Stour-bridge.

A SSISTANT; part time; qualified; aged 35. "Nemo," 3 White Lion Buildings, Islington.

CUM-TENENS; qualified; disengaged; experienced. "Asculap," 32 Laurel Grove, Penge.

TEMPORARY; in or cut doors; now diseugaged. Davies, 73 Tahley Road, Tufnell Park, N.

MANAGER or Locum-teneus; disengaged. "Chemleus," 3 Woburn Place, Russell Square.

JUNIOR; qualified; aged 22; good references; diseagaged. W. Owen, Glanheuno, Dwyran, Anglesca.

A SSISTANT or Dispenser; qualified; good references. "Ohemist,' 24 Warrior Square, St. Leonards.

ANCHESTER or Suhurhs.—Junlor (21); 6 years' experience. "Chemist" 117 Chorlton Road, Manchester.

TEMPORARY; experienced; can manage; disengaged September 26. "Assistant," care of Spargo, Chemist, Lowestoft.

LOCUM-TENENS during absence; long experienced; gentlemanly address; country. "Ph. Ch.," 39 Powis Square, W.

ANAGER of Branch or Locum-tenens; qualified; thoroughly reliable; highest references. H., 194 Harrow Road, W.

A SSISTANT (abstainer) requires situation in London, with time for study and evening classes. K., 11 St. Mary's Hill, Stamford.

A SSISTANT: accustomed to good-class Dispensing and Prescribing business; 13 years' experience. D., 95 High Street, Putney, S.W.

A SSISTANT (22), 7 years' Retail experience, seeks permanency in Wholesale and Manufacturing business. S., 97 High Street, Bedford.

MANAGER or Temporary; Minor qualification; married; aged 36; 19 years' experience. B., 93 Kingston Road, South Wimbledon.

EVENING Employment; Minor; disengaged 6 P.M.; N.W. preferred; indoors; good experience. "Chemist," 2 Upper Street, Islington, N.

CCUM-TENENS or Branch Manager; Family, Mixed, or Agricultural husiness; registered. P. D. S., 17 Trinity Street, Nottingham.

JUNIOR; 21; experience in good-class Dispensing; highest references; London preferred; time for study. W., Stanley House, Sleaford.

DISENGAGED; aged 26; excellent experience and reference; height 6 feet; London preferred. "Colocynth," 9 Courtwell Street, Bayswater.

JUNIOR; 18½; 5 ft. 7 in.; outdoors; Extractor; Manchester and suhurbs preferred; good references. "Alpba," 203 Manchester Street, Oldham, Lancs.

A S Assistant; height 5 ft. 8 ln.; aged 24; can Prescribe and Extract; good experience; London preferred. E. B., 2 Wheatsbeaf Terrace, Lea Bridge Road, Leyton.

A SSISTANT (outdoors); aged 27; unqualified; 11 years' varied experience; good Prescriber; can Extract. Buruett, c/o Mould, Ohemist, Wellington Lane, Hull.

ANAGER; aged 32; experienced; suburbs or Devonshire preferred; would negotiate purchase. "Chemicus," Office of THE CHEMIST AND DRUGGIST, 42 Cannon Street, E.C.

TRAVELLER, Locum-tenens, or Branch Manager; 18 years' experience; Minor and Hali qualifications; married; disengaged. "Pilla," 85 Willows Lane, Accrington.

LOCUM-TENENS and Temporary Manager during absence or otherwise: registered; stendy and reliable; highest references. "Chemist," 23 Florence Road, London, S.E.

PHARMACIEN.—Qualified French Pharmacien (28), experienced in English prescriptions, and speaking some English, wants situation in England; moderate salary. Rigant Léon, 140 Grande Rue, Dieppe, France.

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QUALIFIED Chemist, married, who has bad considerable medical experience, wishes for employment after 2 P.M. daily; would not object to manage Branch or Surgeon's Retail; at present attending lectures for medical degree. Address, "Analyst," Office of THE CHEMIST AND DUNGGIST, 42 Cannon Street, E.Q.

SITUATIONS WANTED—Continued.

ASSISTANT, London; Counter or Dispensing; West-end experience; tall; excellent references; outdoors; discugaged. O. 71 Warlook Road, Paddington.

AS Locum-teneus or Managor: permanency preferred; qualified; over 20 years' experience; married; disengaged. Oare of Mr. Lancaster, 224 Great Colmoro Street, Birmingham.

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same rnles as to attendance at the university, two years' residence being practically the minimum. The Pharmaceutical Preliminary is recognised pro tanto. We may note regarding attendance at the classes of authorised extraacademical teachers, that those who are not at the time matriculated students of the university must, at the commencement of the year of such attendance, enrol their names in a book kept by the university for that purpose, paying a fee of one-half the amount of the matriculation fee paid by students of the university. This regulation also applies in Aberdeen and London. There are four professional examitions:—First, on chemistry, botany, and natural history: second, on anatomy and physiology; third, on regional anatomy, and materia medica and pharmacy; and fourth, on surgery, clinical surgery, medicine, clinical medicine, pathology, midwifery, and medical jurisprudence.

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Comparatively few, if any, seek the M.B., M.C., degree of this university, the medical faculty being incomplete; but, since the Dundee University College is affiliated to the nniversity, the degree may attain popularity; in fact, the college has already made arrangements for all the subjects for the first two years of the curriculum, along with practice at the Dundec Royal Infirmary. The conditions for entrance to the professional examinations are the same as at the other Scotch universities. The degree of Doctor of Medicine may be conferred annually by the university on not more than ten registered medical practitioners above the age of forty years, whose professional position and experience are such as, in the estimation of the university, to entitle them to that degree, and who shall, on examination, satisfy the examiners of the sufficiency of their professional knowledge; fee fifty gnineas, inclusive of the stamp dnty. The examination is conducted both in writing and viva voce, and includes the following subjects:-(1) Materia medica and general therapeutics; (2) medical jurisprudence; (3) practice of medicine and pathology; (4) surgery; and (5) midwifery, and diseases of women and children. For further particulars apply to the registrar.

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For the M.D. degree, obtainable after two years' practice, there is an examination in medical diseases and the theory and practice of medicine, including pathology. For further particulars consult the calendar or regulations to be obtained from the Secretaries, Earlsport Terrace, Dublin.

OTHER REGISTRABLE DEGREES.

Persons who are already registered as medical practitioners may, on application, have the M.D. degrees of the universimay, on application, have the M.D. degrees of the universities of Bâle, Berlin, Bern, Brussels, Erlangen, Freiburg, Giessen, Heidelberg, Malta, Marburg, Paris, Pennsylvania, Pisa, Strasburg, Wnrzburg, Zurich, Buffalo, Harvard, New York, City of New York and Vermont, of the Bellvue Medical College, New York, Jefferson Medical College, Pennsylvania, or Miami Medical College added to their qualifications, as set forth in the register, and may qualifications, as set forth in the register, and may conscientiously use the magic prefix "Dr." to their names. The Brussels degree is the one which many London students enter for, It costs 221. The examination is conducted in English or French, and consists of tests in the principal departments of medicine and surgery. Those who desire further information cannot do better than address Dr. W. C. Steele, 3 Hamilton Road, Ealing.

SANITARY SCIENCE DEGREES.

Diplomas in public health and sanitary science are now granted by all the universities to their graduates. These are registrable additional qualifications, which are exceedingly useful to those-such as pharmacists-who have a thorough knowledge of chemistry, and who propose to seek fame and fortune as medical officers of health. It is unnecessary, at this stage, to enter into detail regarding this qualification, as it will suffice to give the regulations drawn up by the General Medical Council:-

- (1) A period of not less than twelve months shall elapse between the attainment of a first registrable qualification in medicine, surgery, and midwifery and the examination for a diploma in sanitary science, public health, or state medicine.
- (2) Every candidate shall have produced evidence of having attended after obtaining a registrable qualification, during a period of six months practical instruction in a laboratory approved of by the body granting the qualification.
- (3) Every candidate shall have produced evidence of having for six months practically studied the duties of out-door sanitary work under the medical officer of health of a county or large urban district.
- (4) The examination shall have been conducted by examiners specially qualified, and shall comprise laboratory work as well as written and oral examination.
- (5) The rules as to study shall not apply to—(a) medical practitioners registered, or entitled to be registered, on or before January 1, 1890; (b) registered medical practitioners who have for a period of three years held the position of medical officer of health to any county, or to any urban district of more than 20,000 inhabitants, or to any cutiro rural sanitary district.

Students, before they become graduates, will have learnt the exact intrinsic and market values of this qualification, and will then have decided whether they will go in for it or not.

MEDICAL DIPLOMAS.

After all that has been said regarding the education and examinations for medical degrees, it is unnecessary to go on the same lines regarding the diplomas of qualifying and non-teaching bodies. Generally speaking, the entrance to these is simple. A person, having registered as a medical student, takes ont the required classes, and, having obtained his class and hospital certificates, may enter for the various professional examinations. The curriculum, in all cases, is what the General Medical Conneil has formulated.

M.R.C.S. AND L.R.C.P., LONDON.

These diplomas are no longer obtainable separately, a "conjoint board" of the two colleges holding the examinations for the unified diploma at the Examination Hall,

For physics, chemistry, botany, and zoology only.

Victoria Embankment, W.C. (Mr. F. G. Hallett, Secretary). This qualification is the one to which most respect (next to a degree) is attached in London. There are three examinations. The first is particularly easy for chemists and druggists who have attended courses of lectures (recognised hy the colleges) while studying for the Pharmaceutical examinations. The first examination subjects are chemistry, chemical physics, materia medica, pharmacy, elementary anatomy, and elementary physiology. A candidate is admitted to the examination on chemistry and chemical physics, materia medica, and pharmacy on producing evidence of having heen registered as a medical student, and of having received instruction in chemistry, materia medica, and pharmacy as part of the second examination; but he will not he admitted to the examination on elementary anatomy and elementary physiology earlier than the end of his first winter session at a medical school. The rest of the examinations are on G.M.C. lines, the final one being taken in sections if preferred. The total fees are 361.15s.

L.S.A.

The Society of Apothecaries, Blackfriars, E.C., conducts a preliminary examination in arts, but the General Medical Council has advised the Society to discontinue it. It has not yet done so, and the next examination will be held at the Hall on December 4 and 5. It is important for pharma-ceutical students to note that the Society specially declares that "no subject is required to be taken up again in which a candidate has passed before any examining body recognised by the Medical Conneil." They may, therefore, with the Preliminary and Minor certificates, enter for the following subjects:-Algebra, including simple equations; geometry, including the first book of Enclid, with easy questions on the snbject-matter of the same [Enclid's Axioms will be required, and no proof of any proposition will be admitted which assumes anything not proved in preceding propositions in Euclid]; elementary mechanics of solids and fluids, comprising the elements of dynamics, statics, and hydrostatics. If they hold the Preliminary only, they must also take one of the following:-Greek-Xenophon, Hieron (Macmillan & Co.), grammar, translation, and translation from English into Greek; French—Chateaubriand, "Voyage en Amérique" (Williams & Norgate), grammar, translation, and translation from English into French; German—Chamisso, "Peter Schlemihl" (Williams & Norgate), grammar, translation, and translation from English into German; logic; hotany, or elementary inorganic chemistry. The fee for the examination is 1l. 1s.

There are three professional examinations, and the student may enter for the first primary before he has registered as a medical student. The examination includes chemistry and chemical physics (i.e., heat, light, and electricity), practical chemistry, materia medica (including the botany of the Pharmacopæia), and pharmacy and prescriptions. Of course the instruction must be obtained in these subjects as usual. The other examinations are similar to those at the colleges. The total fees are 10l. 10s. Particulars may be obtained from Mr. C. E. Armand Semple, B.A., M.B., Cantab., secretary.

SCOTCH TRIPLE QUALIFICATION.

[L.R.C.P. & S.E. and L F.P. & S G.]

This is a registrable qualification, conferred conjointly by the Royal Colleges of Physicians and Surgeons of Edinburgh and the Faculty of Physicians and Surgeons of Glasgow. Persons of either sex are admitted. There are three examinations (materia medica and pharmacy are in the second), and candidates are exempted from the first and second if they show that they have passed the corresponding examinations of any other qualifying hody in the United Kingdom, or of certain foreign and colonial bodies, particulars regarding which, as of all other matters in connection with the diploma, may be obtained from Mr. James Robortson, solicitor, I George Square, Edinburgh, or Alexander Duncan, B.A., Faculty Hall, St. Vincent Street, Gla-gow. The examinations are held four times a year in Edinourgh, and twice a year in Glasgow. Total fees, 261. 5s Female practitloners are admitted to the conjoint qualification, but not to the Fellowship of the Royal College of Surgeons, Edinburgh.

IRISH DOUBLE QUALIFICATION.

[L.R C.P. & S.I.]

There are four professional examinations for this diplomas and they are very similar to those for the English "donble." They are written, oral, and practical. The fees amount to 42l. A preliminary examination is held in March and September of each year, of which particulars may be obtained from Mr. Greenwood Pim, 47 Dawson Street, Dublin.

L.A.H., DUBLIN.

This diploma is now granted to persons of either sex by the Apothecaries' Hall of Ireland and the Royal College of Surgeons, Ireland, conjointly. There are four professional examinations, and the fees amount to 34l. 13s. Secretary, Mr. Robert Montgomery, M.R.C.S.

MEDICAL EDUCATIONAL INSTITUTIONS.

The following figures are based on a four years' corriculum. We again remind readers that all who commence their studies after Jannary 1, 1892, must extend their studies to five years. In all cases the winter session begins in October, and the summer one in April. Address the deans or secretaries for further information, especially regarding prizes and scholarships. The fees, unless when otherwise stated, include hospital practice, and, in the case of teaching universities, graduation fees.

PROVINCIAL.

ABERDEEN. — University. — Fees, minimum, 60l. Dean and Secretary, Professor Stephenson.

BELFAST.— Queen's College.—Clinical instruction is given in Belfast Royal Hospital (perpetual fee, 10l. 10s.). Class lectures, from 2l. to 3l. per subject. Registrar, Dr. Purser.

BIRMINGHAM.—The Queen's College.—Fees for lectures and clinical instruction, 105l. Dean of the Faculty, Professor Windle, M.D.

BRISTOL. — University College Medical School. — Fees, 89l. 5s. Dean of the Faculty, Dr. E. M. Skerrit.

CORK.—Queen's College.—Fees, about 651., including one year in hospital only, and no examination fees. Registrar, Mr. Alexander Jack, M.A.

DUBLIN.—Catholic University Medical School, Cecilia Street.—Fees for donble Irish qualification, including examination fees, 1481.

University School of Physic (Trinity College).—Fees, 138l. 16s. 6d., including degree. Registrar, Mr. H. W. Macintosh, M.A., Trinity College.

Hospital instruction may also be obtained at Sir Patrick Duns' Hospital, 12l. 12s, and the City of Dublin Hospital, 12l. 12s. per nine months, as well as at various maternity hospitals in the city.

DUNDEE.—University College.—Instruction is given in the subjects for the first two years of the curriculum, with practice in the infirmary and lunatic asylum. Fees, 341. 13s.

EDINBURGH.—School of Medicine.—Fees for Scotch triple and examination fees, 100l. Secretary, Dr. Stevenson Macadam, Surgeons' Hall, Nicolson Street.

Mcdical College for Women, 30 Chambers Street.—Mr. A. T. Hunter, 51 Hanover Square, Secretary.

School of Medicine for Women.—Particulars may be obtained from Miss Sophia Jex Blake, M.D., Surgeon Square, Edinburgh, or from Miss Black.

University Medical School.—Fees for M.B., C.M., about 1201., including graduation fees. Secretary to the Senatus,

Mr. John Kirkpatrick.

GALWAY.—Queen's College.—Apply to the Bursar for particulars.

GLASGOW.—University, Faculty of Medicine.—Fees, about 1201. The Assistant Clerk, Matriculation Office, supplies particulars.

Anderson's College Medical School, Dumbarton Road.— Fees (lectures and nospital) for Scotch triple qualification, about 48l. (the cheapest curriculum in the kingdom). Dean-Professor, J. R. Watson, M.A. Parkhend Cross. St. Munyo's College and Glasgow Royal Infirmary.—Fees, for Scotch triple qualification studies, 47l. 5s.; hospital, 211. Dean, Professor Clark, 86 Castle Street.

Western Medical School, University Avenne, Hillhead.—

Secretary, Mr. J. N. Morton, M.A.

LEEDS.— Forkshire College.—Fees (exclusive of degree fees), 145l. 10s. Secretary, Mr. W. H. Brown, 19 Queen

LIVERPOOL.—University College.—Fees as at Lecds. For double qualification curriculum, 57l. 15s. Dean, Mr. F. T. Paul, F.R.C.S., 38 Rodney Street.

MANCHESTER.—The Owens College.—Fees as at Leeds. Registrar, Mr. M. W. Holder, M.A.

NEWCASTLE-ON-TYNE. - Durham College of Medicine. -Fees, 891. 5s. (exclusive of degree fees). Secretary, Lieut.

SHEFFIELD.—School of Medicine.—Fees, about 85%. Secretary, Dr. W. T. Cocking, Leopold Street.

METROPOLITAN SCHOOLS.

The fees quoted in the following instances are for class tectnres, hospital and clinical instruction, for the English donble qualification. The curricula of the schools are recognised by most of the universities, &c., in the country :-

CHARING CROSS HOSPITAL.—Fees, 941. 10s, or 105l. in instalments. Secretary, Mr. J. F. Pink, 62 Chandos Street, W.C.

GUY'S HOSPITAL.—Fees, 1311. 5s., or 1371. 10s. in instalments. Dean, Dr. Perry, the Hospital, Borongh, S.E.

KING'S COLLEGE, Strand, W.C.—Fees, 1261. 11s. 6d., or 1381. in instalments. Dean, Professor John Curnow.

LONDON HOSPITAL, Mile End, E.—Fees, 1261., or 1361. 10s. in instalments. Warden, Mr. Munro Scott.

LONDON SCHOOL OF MEDICINE FOR WOMEN, 30 Handel Street, Brunswick Square, W.C.—Fees (exclusive of pharmacy and two other subjects), 105%, or 115% in instalments. Secretary, Miss Heaton.

MIDDLESEX HOSPITAL MEDICAL SCHOOL, Cleveland Street, W.—Fees, 1051., or 1151. 10s. in instalments. Dean, Mr. Pearce Gould, M.S.

ST. BARTHOLOMEW'S HOSPITAL, West Smithfield, E.C.-Fees, 131l. 5s., or 138l. 12s. in instalments.

ST. GEORGE'S HOSPITAL, Hyde Park Corner, S.W.—Fees, 125l., or 130l. by instalments. Dean, Dr. T. Whipham.

ST. MARY'S HOSPITAL, Cambridge Place, Paddington, W.—Fees, 1201., or 1251. in instalments. Dean, Mr. Geo. P. Field.

ST. THOMAS'S HOSPITAL, Albert Embankment, S.E.-Fees, 1311. 5s., or 1451. in instalments. Medical Secretary, Mr. G. Rendle, at the Hospital.

UNIVERSITY COLLEGE, Gower Street, W.C.—Fees, 1261., or 1311. 5s. in instalments. Dean, Professor E. A. Schäfer,

WESTMINSTER HOSPITAL, Caxton Street, S.W.—Fees, 1051., or 1201. in instalments. Dean, Dr. Allchin.

HOSPITAL PRACTICE.

Students who wish to "walk the hospitals" for a term or more can obtain the necessary facilities at the following institutions. The general hospital practice in most instances is recognised by examining bodies, so that the time spent in these hospitals counts for the examinations.

BATH ROYAL UNITED HOSPITAL. - Registrar, Mr. H. Culliford-Hopkins. Fees for attendance, twelve months, 101. 10s.; or 1l. 1s. per month.

BRADFORD INFIRMARY AND DISPENSARY .- Fec, perpetnal, 10l. 10s.

SUSSEX COUNTY HOSPITAL, Brighton.—Fee, 211. for two

GENERAL KENT AND CANTERBURY HOSPITAL .- Fee to pupils of the staff, 7l. 7s. Secretary, Mr. Charles H. Read.

ROYAL ALBERT HOSPITAL, Devonport .- Pupils of the medical staff are allowed to attend the hospital practice and

to learn pharmacy on the payment of 21.2s. to the dispenser.

DERBYSHIRE ROYAL INFIRMARY.—Fee, 51. 5s. a year.

THE ADELAIDE MEDICAL AND SURGICAL HOSPITALS, Peter Street, Dublin.-Fee for nine months' hospital attendance, 121. 12s.

COOMBE LYING-IN HOSPITAL AND GUINNESS DISPEN-SARY FOR THE TREATMENT OF DISEASES PECULIAR TO WOMEN, Dublin.—Fees, six months, 8 guineas.

MATER MISERICORDIAE HOSPITAL, Dublin.

Dr. Steevens' Hospital.—Fees, nine months, 121. 12s Honorary Secretary, Dr. R. A. Hayes, 82 Merrion Square Sonth, Dublin.

ROYAL INFIRMARY, Edinburgh.—Fees, perpetual, 121.

EDINBURGH EYE, EAR, AND THROAT INFIRMARY, 6 Cambridge Street, Lothian Road.—Treasurer and Secretary, Mr. A. P. Purves, 12 Queen Street.

DEVON AND EXETER HOSPITAL, Exeter.—House Surgeon, Mr. Reginald Martyn, who will give particulars as to

WEST OF ENGLAND EYE INFIRMARY, Exeter.—Secretary, Mr. R. C. Cole.

GLASGOW HOSPITAL AND DISPENSARY FOR DISEASES OF THE EAR, 28 Elmbank Crescent.

GLASGOW WESTERN INFIRMARY.—Fee, 20 guineas, in one payment.

ROYAL HOSPITAL FOR SICK CHILDREN, Garnet Hill, Glasgow.—Fee, 11. 1s. House Surgeon, 45 Hill Street, Garnet Hill, Glasgow.

GENERAL INFIRMARY AT GLOUCESTER, AND THE GLOUCESTERSHIRE EYE INSTITUTION.—Fee, 101. for the first half-year.

HOMEOPATHY. - The London Homeopathic Hospital Medical School, Great Ormond Street, Bloomsbnry, W.C., provides instruction in the principles of homœopathic medical practice. Students of any medical school may attend before or after qualification. The fee for the complete course is 10l. 10s. Secretary, Mr. G. A. Cross.

LINCOLN COUNTY HOSPITAL.—Fee, 101. 10s.

LIVERPOOL ROYAL SOUTHERN HOSPITAL.—Fees for hos pital practice and clinical lectures, perpetual, 261. 5s.

LIVERPOOL NORTHERN HOSPITAL. - Fees, perpetual, 26l. 5s.; one year, 10l. 10s.

NEW ROYAL INFIRMARY, Liverpool.—Good practice here.

CENTRAL LONDON THROAT AND EAR HOSPITAL, Gray's Inn Road, E.C.—Fee, six months, 5l. 5s.

GREAT NORTHERN CENTRAL HOSPITAL, Holloway Road, N.—Honorary Secretary, Dr. H. W. Syers, 3 Devonshire Street, Portland Place, W.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—Fee, one month, 11. 1s.; perpetnal, 101. 10s.

HOSPITAL FOR WOMEN, Soho Square.—Fee, three months, 87. 88.

LONDON TEMPERANCE HOSPITAL, HAMPSTEAD ROAD, N.W.—For particulars apply to Dr. W. J. Collins.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL AND MID-WIFERY TRAINING SCHOOL.—Fees, medical pupils, 31. 3s. for one week, 5l. 5s. for two weeks, and 6l. 16s. 6d. for four wceks.

ROYAL ORTHOPÆDIC HOSPITAL.—Fee, perpetual, 101. 10s.

ROYAL LONDON OPHTHALMIC HOSPITAL, Moorfields, E.C.—Fee, perpetual, 5l. 5s.

ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, 19 King William Street, W.C.—Fee, perpetual, 51. 5s.

ST. PETER'S HOSPITAL FOR STONE, Henrietta Street, Covent Garden.—Qualified medical students are admitted free.

MANCHESTER GENERAL HOSPITAL FOR SICK CHILDREN, Pendlebury and Gartside Street.

NORFOLK AND NORWICH HOSPITAL.—Pees, 15l. 15s. for twelve months. Pupils. Secretary, Mr. Howard J. Collins.

NORTHAMPTON GENERAL INFIRMARY. — Instruction is given in anatomy and materia medica and practical pharmacy. Fee, 25%, per annum.

GENERAL HOSPITAL, NOTTINGHAM.—Fee, 10% 10% annually.

ROYAL SOUTH HANTS INFIRMARY, Southampton.—Fee, 101. 10s. for a perpetual ticket.

NORTH STAFFORDSHIRE INFIRMARY AND EYE HOSPITAL, Hartshill.—Secretary, Mr. R. Hordley, Hartshill, Stoke-on-Trent.

ROYAL HANTS COUNTY HOSPITAL, Winchester.—Fee, 101. 10s. for one year.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—A preparatory school of medicine and surgery.

SCIENTIFIC.

ADVANCED CHEMISTRY, as a scientific pursuit, is at a discount just now, and there is a rush to electrical technology. Nevertheless, a question which we are very frequently asked by correspondents is, "What qualifications are needed to hecome an Analytical Chemist?" We, therefore, pro-

pose to answer that question first.

There is no law specially applying to analytical chemists. It is true that the Pharmacy Act prevents anyone using the title "chemist," hut the Pharmaceutical Society wisely refers this stricture only to those who keep open shop; and that analytical chemists do not do. If, therefore, anyone choses to set up as an analytical chemist and call himself so, there is no power in the world to prevent him. He must consider, however, that the market is full of thoroughly competent men, whose experience is gained by long practice and systematic education. There are analysts who have made a name for themselves by their investigations, analysts who are university graduates, and analysts who are leaders in the various scientific societies affiliated to chemistry. All are in the field, and are just as keen to fight for the security and competence they have gained, as is the most humble one in the ranks. And there are plenty of that sort-plenty of men who, with no qualification hat the skill acquired hy long practice, start as analytical chemists, and, to keep the pot boiling, gladly accept work at sweating rates. The pot boiling, gladly accept work at sweating rates. The gninea fee is an exceptional thing with the rank and file of analysts. Half a crown for a milk or hutter analysis, the same for a cinchona assay, and half a sovereign for a water are everyday fees which many are glad to accept. It is only those who get to the top of the tree who are acquainted with the gnineas, and even some of them are open to "trade" now and then.

It is evident, therefore, that the highest qualification is the best card to play as an analyst. This is the policy advised by the Institute of Chemistry-a body which was formed over a dozen years ago, to do for analysts what the Pharmaceutical Society was intended to do for pharmacists. The Institute confers two titles—the Associateship, A I.C., and the Fellowship, F.I.C. These titles are supposed to be qualifications, and donhtless they will be a few years hence; but hitherto the endeavour of the Institute to be strong in numbers has somewhat minimised the value of its titles. Recently the Council have made a strong effort to definitely fix a high standard for the Associateship, and they also impress upon public hodies not to employ anyone as analyst who does not helong to the Institute-this apparently with success. As far as can he judged, the Institute will succeed in what it aims at—viz., to make its titles the recognised qualification for analysts; and it would he wise on the part of heginners to so regard it, taking the systematic course of training set forth in the

REGULATIONS FOR A.I.C.

The Institute of Chemistry requires all candidates to be 21 years of age, and to have passed a three-years' course of systematic study in theoretical and practical chemistry,

physics, and elementary mathematics, at a university college or school approved by the Council. Those who have spent four years in the laboratory of an F.I.C. only require to study two years. They must pass their school examinations in the subjects and a practical examination conducted by the Institute examiners, the subjects being qualitative and quantitative analysis, including morganic and organic work, gas analysis, preparation of pure materials, &c. The fee for the examination is 2l. 2s., and it is held in June or July each year. The names of the schools recognised, and the centres at which the examination is held, can he obtained from the secretary, Mr. Charles E. Groves, 9 Adelphi Terrace, London, E.C.

Those who have already served an apprenticeship in pharmacy should take the three years' curriculum, thus saving the premium to an analytical chemist. There is no doubt that the latter course is advisable for those who are fresh from school. The premiums demanded by analysts vary from 100% to 250% for the term of four years, the higher figure heing obtained by leading men with special practices. It ought to be a matter of serious consideration with those who are to advise a youth in regard to a scientific career whether analytical work alone will satisfy his aspirations.

A DEGREE IN SCIENCE

is a thing which few do not wish, but in few cases indeed is it an "open sesame" to a competency. One who holds a degree is in the peculiar position of heing able to turn his attention to anything; but when fresh from college is unfit to take a controlling position in any industry—he still lacks technical experience, and that can only he acquired by the graduate accepting a subordinate position in a factory or elsewhere.

The most popular degrees in science are those of the University of London, which are obtainable sine curriculo; hut most science schools have conrses of instruction specially adapted for the examinations. The candidate for B.Sc. must pass the Matriculation examination (p. 443), and a year after, if he has not obtained honours, he may enter for the intermediate examination (fee 5%). This will be held on the third Monday of July, 1892, at Aherystwith, Bristol, Epsom, Leeds, Liverpool, Manchester, and Newcastle-on-Tyne, as well as in London. The examination is in chemistry, experimental physics, pure and mixed mathematics, and general hiology, including practical work iu all the subjects except mathematics, there heing six hours devoted in hiology to microscopy and dissections. A year after this examination the candidate may proceed to the B.Sc. examination (fee 5l.), in which he has the privilege of selecting three out of nine subjects-viz, (1) Pure mathematics, (2) mixed mathematics, (3) experimental physics, (4) chemistry (inorganic, organic, and qualitative and quantitative analysis), (5) hotany, (6) zoology, (7) animal physiology, (8) physical geography and geology, and (9) mental and moral science. Schedules of the subjects and all the conditions of entry are contained in "Regulations relating to Degrees in Science," which may be obtained from the Registrar, Burlington Gardens, W. A pass or honours may be entered for. Certain valuable awards are made to the hest of those who take honours. The Doctorate is now very difficult to obtain. Two years must elapse after taking the B.Sc. before the candidate can proceed to it. He must "profess" a subject in which he wishes to take his degree, and submit a dissertation, or thesis, on some special portion of the subject, and any printed contributions to the advancement of sclence which he has published. He may be examined, hnt not if he has taken his B.Sc. with honours. Fee, 51.

B.Sc, Victoria.—The course of study for this degree is for three years, and may be taken at the University Colleges of Leeds and Liverpool, or Owens College, Manchester. The first year's course leads up to the preliminary examination, the second year's to the intermediate, and the third year's course to the final examination. The subjects of the Preliminary examination are:—English language (including history and geography), mathematics, and three of the following subjects (including a language):—Greek, Latin, French, German, elementary mechanics, and elementary chemistry. If candidates can pass this examination before commencing their collegiate studies, they need only attend the lectures for

two years. The degree is obtainable in mathematics, engineering, experimental, biological, or geological sciences.

B.Sc., DURHAM .- Students must attend the College of Science, Newcastle, for two years, and be examined for the title "Associate in Physical Science." Having passed in Latin or Greek and French or German (as part of the preliminary examination), a year after obtaining the associateship they may be examined for B.Sc. in any four of a dozen subjects. B.Sc.'s of two years' standing may proceed to the M.Sc. degree. For full particulars see the Calendar of the Durham College of Science.

B.Sc., EDINBURGH.—Candidates for this degree must pass the Matriculation examination required of medical students, or be exempted on account of holding equivalent certificates, of which a list is given in the pamphlet, "Regulations for the Graduation in Science." The attendance on science classes for the degree must extend over three years, at least one of which must be passed at the University of Edinburgh, and the other two years at any recognised science school. There are two examinations which follow the completion of the class subjects, and the degree may be taken in (a) the mathematical, (b) the physical experimental, or (c) the natural sciences. A year after graduating as Bachelor the Doctorate may be applied for, the candidate submitting before examination a thesis containing either an account of original work done by him, or historical or critical research connected with the special subjects professed by him for

B.Sc., Glasgow, is granted under similar conditions.

B Sc., St. Andrews.—Students of the Dundee University College are eligible for this. They must pass a preliminary examination. The first professional examination may be taken in portions of at least two of the following subjects at a time: -- Mathematics, natural philosophy, and five others chosen by the student. Of these five two mnst be treated by laboratory methods. In each of the seven subjects a proper course must have been taken and a certificate obtained to that effect. For the next and final examination two subjects out of five must be professed. Of these one, at least, must be treated practically. A three years' curriculum is required, but only one year need be spent in Dundee or St. Andrews, the rest being taken at recognised schools.

D.Sc., IRELAND.—Granted by the Royal University of Ireland to its B.A.'s. Candidates pass an examination in one

of the following sections, viz.:-

(a) Mathematics and mathematical physics.

(6) Experimental physics and chemistry.

(c) Biology, including

examination.

i. Botany and zoology, or chemistry.

ii. Physiology.

(d) Geology, including physical geography and mineralogy, with either chemistry or hotany and zoology.

A year after another examination in a selected subject must be passed, or an essay on a special subject submitted for approval.

PH.D.—A degree obtainable at certain German universities after two years' residence. Students must be able to understand spoken German, otherwise they cannot possibly make

progress in the classes.

TECHNICAL DIPLOMAS. — In addition to the degrees above mentioned and the various science school associateships, there are certain certificates which are highly valued, especially for engineering and industrial pursuits. These are the certificates granted by the Royal Colleges of Science, the City and Guilds of London Institute, and King's College,

London (A K.C.).

F.C.S.—No examination is required in order to become a Fellow of the Chemical Society. Suitable persons of good social standing are elected by ballot. They must, however, be nominated by at least five fellows of the Society, three of whom can from personal knowledge attest the suitability of the candidate. Forms of application may be obtained from the secretaries of the Chemical Society, Burlington House, London, W. Blackballing has been practised frequently during the past year, and on some occasions all candidates connected with pharmacy were rejected. Those who think of applying should, therefore, consider whether they are by education and scientific reputation likely to succeed. The entrance fee is 4l., and the annual subscription 2l.

EDUCATIONAL INSTITUTIONS IN SCIENCE. METROPOLITAN.

There are two establishments subsidised by the City and Guilds of London Institute, at which the most thorough education is imparted to students, in order to fit them for scientific pursuits. The more "select" establishment is

The Central Institution, Exhibition Road, S.W.,

whereat the courses of instruction are arranged to suit the requirements of (1) persons who are training to become technical teachers, (2) persons who are preparing to enter engineers' or architects' offices or manufacturing works, and (3) persons who desire to acquaint themselves with the scientific principles underlying the particular branch of industry in which they are engaged. The institution is richly endowed, so that for 25*l*. per session students obtain what costs from twice to three times as much. Diplomas are granted in the engineering, physical, and chemical departments to those who pass the Matriculation examination, which includes elementary, pure, and applied mathematics, mechanical drawing, physics, chemistry, and French or German. They study in the institution for three years, and pass the examinations. Students must be sixteen years of age on entrance. Only a limited number of pupils are received, the instruction is of the highest order, and many of the associates of the institution have secured valuable appointments. Anyone who passes through the course of instruction should have no difficuly in taking B.Sc, Lond.

Technical College, Leonard Street, Finsbury, E.C.

At this college instruction is given in the following departments:—(1) Mechanical engineering and applied mathematics, (2) electrical engineering and applied physics, (3) industrial and technical chemistry, (4) applied art, and (5) the building trades. The education is as thorough as that given at the Central Institution, but, if anything, it is less theoretical-i.c., the instruction bears more directly upon industrial production, and fits pupils to take intermediate posts in industrial works, whereas pupils from the Central Institution are fitted to take the highest positions. The course lasts two years in the day classes, and the fees are 15l. per session. Evening classes are also held during the winter months. The fees are low, and time put in at these classes is good for the A.I.C. examination. The following are a few of the classes, and for full particulars regarding fees and the subjects dealt with we refer inquirers to the prospectuses, obtainable from the headquarters, Gresham College, Basinghall Street, E.C.:-

Monday.

7 to 9-Organic Chemistry; Course E. Prof. Meldola, F.R.S., and Mr Streatfeild. F I.C.

7 to 9-Inorganic Chemistry; Course D. Mr. Evans, F.I.C.

8 to 9-Electrical Technology; Advanced Course. (Special Course of Lectures, Electricity Meters). Prof. Thompson, F.R.S., and Mr. O'Recffe, B.E.

Wednesday.

6 to 9-Chemical and Electrical Laboratory Work.

8 to 9-Electrical Technology; Elementary Course. Prof. Thompsou, D.Sc., F.R.S., and Mr. Thomas.

Thursday.

6 to 8.30-Practical Electroplating (after Christmas). Mr. Rousseau.

6 to 9-Chemical Laboratory.

8 to 9 - Special Course of Lectures, Telephones. Prof. Thompson, D.Sc.

Friday.

6 to 8-Physical Laboratory. 8 to 9-Practical Physics. Mr. Thomas.

The institute also conducts technological examinations once every year at various centres throughout the kingdom. Programme, with syllabus of subjects, &c., price 6d.; by post, 8d.

SOUTH KENSINGTON SCHEME.

What are known throughout the United Kingdom as South Kensington Science classes provide students with a good means of acquiring an elementary, and even an advanced, knowledge of the sciences. The subjects are generally taught in evening classes by persons who have

passed a more advanced stage of the the sclence than that which they profess. Amongst the subjects are sound, light and heat, magnetism and electricity, inorganic and organic chemistry, animal physiology, botany, and hyglene.

The fees are low to those who enter for the annual examination, as the teachers are pald by results. Students cannot attend more than two subjects in one day on these conditions, and they must attend a minimum number of lectures in each course. We advise each one to consult local teachers regarding the classes, and those who wish to hecome teachers should invest sixpence in the "Directory of the Science and Art Department" (by post from Eyre & Spottiswoodo, East Harding Street, E.C., 9d.). This contains full particulars regarding the curricula in all subjects, as well as of the Government scholarships.

We may state briefly regarding these that they are as

Royal Exhibitions, four open each [year, to the Royal College of Science, London. Instruction and 50% a year for

Royal Exhibitions, three open each year, to the Royal College of Science, Dublin. Instruction and 50% a year for three years.

National Scholarships, twenty-two open each year, tenable at the option of the holder at the Royal College of Science, London or Dublin. Instruction, 30s. a week for forty weeks, and railway fare from home and back.

Free Studentships, six open each year, to the Royal College of Science, London. Instruction only.

These are awarded to the best students of the year as determined at the annual examinations, mathematics being one of the subjects. For particulars regarding the Whitworth Scholarships see the "Whitworth Prospectus," price 3d.

The Royal College of Science, London.—The associateship of this college is of high value, and is granted in mechanics, physics, chemistry, hiology, geology, or agriculture. The course of instruction is for three years, and costs a little over 100l. Only a few pupils are admitted, as most of the benches are occupied by Government students. For further information apply to the Registrar, Royal College of Science, South Kensington, London, S.W. The associate-ship of the Royal School of Mines, which is specially valuable to metallnrgical chemists and engineers, is on the foregoing lines, but the third year's study is, like that in other departments, special. Here we may note that a feature in these schools and the Central Institute is the importance attached to teaching all technical students mechanics and other engineering subjects. This is now indispensable to the highest order of work in chemical technology. The courses of instruction at the Royal College of Science, Stephen's Green, Duhlin, are similar to those at the London College, but the fees only amount to 10l. per session for the lecture courses of the faculty, or 2l. for each separate course of lectures. For particulars apply to Professor J. P. O'Reilly.

King's College (Strand, W.C.) and University College (Gower

Street, W.C.) have their scientific departments modelled to the London University degrees. Students must be sixteen, and of sound education on entrance. Instruction is given at King's College in mathematics, mechanics, physics, chemistry, geology, mineralogy, physiology, practical biology (animal), and botany—a complete course of instruction extending to three years. Lectures are also given in the art and scientific principles of photography. A.K.C. is granted to those who take the complete course of instruction and pass the examinations. During the winter months there are evening classes, amongst the subjects being chemistry, botany, physics, and physiology, as well as languages. The fees vary from 1l. 1s. to 2l. 2s. per subject. At the University College classes are held in chemical technology, such as the manufacture of sulphuric acid, alkali, coal-tar products and colours, fucl and gas manufacture, applications of ehemistry to engineering, &c. The three years' course of instruction at these institutions costs about 1257.

Birkbeck Institution, Chancery Lane.—Here the student may attend evening classes in hotany, microscopy, chemistry (inorganic and organic), experimental physics (magnetism and electricity, sound, light, and heat), photography, and many other subjects. These are held in the winter months, and the fees are only a few shillings in each case. Apply to the Secretary.

Charterhouse Science and Art Schools, Goswell Road, E.C. -Classes are established in this institution by which instruction of a practical character is given in most of the sciences at a very nominal fee.

Goldsmiths' Institute, New Cross, S.E. — Head of the Chemical Department, Mr. A. G. Bloxam, F.I.C. The special classes in chemistry, as applied to various arts and industries, are held in the evenings.

People's Palace, Mile End Road, E. (Drapers' Company

Institute).—Classes similar to the Birkheck.

Polytechnic, 309 Regent Street, W.—The educational arrangements of this institution are wonderfully complete. In addition to all the science subjects under the South Kensington scheme, we note that there are classes in bookkeeping, photography, oils, colonrs, and varnishes, and oils and fats. The classes are held in the evening.

PROVINCIAL.

Note.—If a student wishes to know exactly what is taught in any of the subjoined he should send an addressed postal wrapper to the secretary of the college he selects for a copy of the prospectns.

Aberdeen.-The University classes may he attended for

the A.I.C. examinations.

Aberystwith.—The University College of Wales is open to persons above sixteen. Instruction for A.I.C., B.Sc. Lond. and Edin. associateship of the college, and certain medical classes. Annual fees, 10l.

.Bangor.—The University College of North Wales. Recognition same as Aberystwith. The college has an agricultural department, of which particulars will be found on page 453.

Belfast.—Queen's College is recognised by the Institute of

Chemistry.

Birmingham.—The Mason College admits students of sixteen, or those nnder who pass an examination in arithmetic and English, Greek, Latin, and French or German. The course of instruction for the associate diploma in scientific subjects extends to three years; qualifies also for A.I.C., B.Sc. London, and other degrees of that and other universities and qualifying bodies. Sciences appertaining to pharmacy and chemical technology are well looked after. Consult "Syllabns of Day Classes," price 6d. Evening classes are

Bradford.—At the Technical College instruction is given in chemistry, hotany, and materia medica, the latter two subjects heing taught hy Mr. W. West, F.L.S., in day and evening classes.

Bristol.—The University College educates for B.Sc., London and A.I.C. Day and evening classes are held, and are suitable for pharmaceutical students. The fees are 5l. 5s. each subject per session for day, and 1l. for evening, classes.

Cardiff. -The University College of South Wales and Monmouthshire admits students of sixteen. Training is given for the college associateship (two sessions), London University examinations, and the classes are recognised by varions medical hodies. Day and evening classes are held.

Cork.—The Queen's College course qualifies for A.I.C. and

science degrees.

Dublin.—The Royal College of Science and Trinity College

are approved for the A.I.C. diploma.

Dundee.—The University College has chairs of hotany, chemistry, and natural philosophy, as well as mathematics. Attendance at the classes qualifies for the St. Andrews University degrees, and is recognised by other bodies. See nnder "Pharmaceutical" for other facilities.

Edinburgh.—There are ample facilities afforded in the University, Medical School, and Heriot-Watt College for

scientific instruction.

Glasgow.—The Glasgow and West of Scotland Technical College has day and evening classes, in which instruction for Government, university, and other examinations can be obtained. Also for any branch of technology. Secretary, Mr. John Young, B.Sc., 38 Bath Street.

Levds.—The Yorkshire College course is adapted for B.Sc.,

Vlc., and A.I.C, as well as other diplomas. This college is exceptionally well equipped for teaching the theory and practice of those industrics which have local prominence. particularly dyeing and textile industries. Evening classes are held in chemistry, botany, &c.; fees, 10s. 6d. per class.—

School of Science and Technology, Rossington Street.

Evening classes are held.

Liverpool.—The instruction given at the University College is akin to that given at Yorkshire College, and carries with it equal privileges; but the same prominence is not given to the technical subjects mentioned.—Institute of Chemical Technology, Hackins Hoy. Principal, Mr. A. Norman Tate, F.I.C. Special classes, day and evening, for B.Sc., London, &e.

Manchester.—The Owens College also instructs for the B.Sc., Vic., and other diplomas. The instruction given is of a high order, and is nniversally recognised. Special attention is paid to the scientific aspects of local industrics.

Nencastle-on-Tyne.—The College of Science course is for the Durham science degree (two years). Also for B.Sc.,

London, or A.I.C.

Nottingham.—The University College is one of the most enterprising institutions in the kingdom, and has received a liberal allowance under the Technical Instruction Act. The classes and practice in the natural and physical science departments are complete, and recognised by examining bodies. Technical courses are a feature. See the prospectus (1d.), published by Mr. John Sands, St. Peter's Gate.

Sheffield.—At the Firth College there are complete science conrses, the chemistry of steel being a notable subject.

Stockport Technical School.—Principal of the Chemical Department, Mr. R. J. Brown, M.Sc., from whom a syllabus, with full particulars of the courses of instruction, hours, fees, &c., can be obtained.

Svansea Technical Institute. — Principal, W. Morgan, Ph.D., F.C.S., F.I.C., to whom apply for particulars of the

winter session.

DENTAL.

By the Dentists Act of 1878 no one is allowed to use the title "Dentist" (alone or in combination), or "Dental Practitioner," or any "name, title, addition, or description" which implies that he is registered under the Act, or specially qualified to practise dentistry, except he be registered. A period was fixed for the registration of all who were entitled to be registered, and that having elapsed no one can now have his or her name placed on the register who has not obtained a licence in dental surgery. There is nothing in the Act to prevent anyone performing any dental operation whatsoever, but no nnregistered person can recover fees for sneh operations.

All who now wish to become registered dentists must

conform to the following regulations:-

1. Pass the Medical preliminary examination and register as a dental student (in the same way as medical students, see p. 442). Students who commenced their apprenticeship or studies before July 22, 1878, are exempt from the examination.

2. Thereafter be engaged four years in professional studies, three of them comprising instruction in mechanical

ustry.

One year's apprenticeship counts as one of the four

years.

The three years' mechanical instruction may be taken before registration as a dental student, but in that case it will not reckon as part of the four years' professional

Obviously four years must elapso between registration as a student and the final examination for a diploma; also obviously the preliminary examination should be passed before apprenticeship. These regulations have been drawn up by the General Medical Council, and are conformed to by the qualifying bodies.

THE PROFESSIONAL EDUCATION

of the dental student therefore consists of:—(1) Apprenticoship, or instruction in mechanical dentistry, for a period of not less than three years; (2) attendance on lectures, &c., at a general hospital and medical school for two winter and one summer sessions—eighteen months; and (3) attendance at a dental hospital and school for two years. During his apprenticeship the student should receive instruction in chemistry, including chemical physics, practical chemistry,

pharmacy, and materia medica, and pass the examination in these subjects before the qualifying body before entering the hospital. Having entered the hospital, he should attend the dental and general courses contemporaneously, and pass the elementary anatomy oxamination at the end of the first winter session, and at the end of the second winter the second conjoint examination in anatomy and physiology. At this point a break may be made to admit of the completion of the dental curriculum and the passing of the final examination for the L.D.S. diploma. That is the course which the London student generally adopts, and elsewhere it is very similar, as will appear from the particulars which we give.

L.D.S., ENGLAND.

Granted by the Royal Colleges Conjointly.

The first and second professional examinations are practically identical with those for the conjoint medical diploma (see page 445). Chemistry, practical chemistry, and materia medica may be taken before registration as a dental student. The subjects for these examinations having been studied and disposed of, the student passes his time as follows:—

First Winter Session.—Anatomy, dissections, physiology, chemistry, hospital practice and surgical clinical lectures, dental anatomy, dental mechanics, dental hospital

praetice.

First Summer Session. - Practical chemistry, materia

medica, dental surgery, dental hospital practice.

Second Winter Session.—Anatomy, dissections, medieine, surgery, hospital practice and surgical clinical lectures, dental anatomy, dental mechanics, metallurgy, dental hospital practice.

Second Summer Session.—Dental surgery, dental hospital

practice.

The L.D.S. examination comprises general anatomy and physiology, general pathology and surgery, dental anatomy and physiology, and dental pathology and snrgery. The practical examination comprises (1) the treatment of dental caries with gold or plaster fillings, and other dental snrgery operations; (2) mechanical and surgical treatment of the various irregularities of children's teeth, and (3) mechanical dentistry. The diploma fees are 10*l*. 10s., and the whole cost of the education is reckoned at about 93*l*., exclusive of the apprenticeship premium.

L.D.S., EDIN.

Granted by the Royal College of Surgeons, Edinburgh. Fee, 10l. 10s. Subjects of the first examination—Anatomy, chemistry, and physiology; of the second—Surgery, medicine, and therapeuties, and the special subjects of dental anatomy and physiology, dental surgery and pathology, and dental mechanics, with a practical clinical, as well as the written, and oral, examinations in the subjects of dental surgery, pathology, and mechanics.

L.D.S., GLASGOW.

Granted by the Faculty of Physicians and Surgeons Glasgow. Regulations and fees, as in Edinburgh. Secretary, Mr. A. Duncan, B.A., 242 St. Vincent Street.

LiD.S., IRELAND.

Granted by the Royal College of Surgeons in Ireland. Three examinations. Fees, 27l. 6d. The first, second, and third examinations are in the same subjects as the corresponding examinations for the conjoint (Ireland) licence, with theoretical, clinical, and operative dental surgery; theoretical and operative dental mechanics; dental anatomy; and metallnrgy additional in the third. The college also grants L.D.S. sinc eurriculo to candidates who were in practice before July, 1878, whose names are on the dental register, without attendance in the required classes. Persons desiring the diploma make application on a special form, with a certificate, signed by two fellows, members, or licentiates of a college, and by two L.D.S.'s Ireland (or two members of the British Dental Association, or of the Odontological Society), attesting good moral character, that he has not, during the past two years, attracted business as a dentist by advertising or other unbecoming practices, and was in praetice before July, 1878. The fee is 271. 6s., and the candidate passes the final examination.

DENTAL EDUCATIONAL INSTITUTIONS.

Full particulars regarding the courses of study provided at schools and hospitals mentioned below may be obtained from the secretaries or deans of the respective institutions.

LONDON

Dental Hospital, Leleester Square, W.—Dean, Mr. Morton Smale. Fees for dental lectures and practice only, 311, 10s.

National Dental Hospital and College, 149 Great Portland Street, W.—Dean, Mr. F. Henri Weiss. Fees, 25l. 4s.

Guy's Hospital, Borough, S.E.—Dean, Dr. Perry. Fees for complete instruction, 70%.

The medical subjects and hospital practice may be obtained at Charing Cross Hospital—fees, 56l. 14s. (including chemistry and materia medica); London Hospital—fees, 42l.; Middlesex Hospital—fees, 56l. 14s.; St. Bartholomew's Hospital—fees, 66l. 3s.; St. George's Hospital—fees, 55l; St. Mary's Hospital—fees, 55l.; St. Thomas's Hospital—fees, 55l.; University College—fees, 63l.; Westminster Hospital—fees, 52l. 10s.

PROVINCIAL.

Birmingham: Queen's College, Dental Department.—Hon Sec., Mr. J. Humphreys, 22 Newhall Road, Birmingham. Fees for all subjects, 63l.

Bristol.—Dental instruction is given in General Hospital.

Dublin: Dental Hospital of Ireland, 25 Lincoln Place.—Dean, Dr. R. T. Stack. Fees for all subjects, 73l. 10s.

At the School of Physic (Trin. Coll.) there are special courses for dental students in dental anatomy and dental metallurgy. Fee for each course, 3l. 3s.

Edinburgh: Dental Hospital and School, 5 Lauriston Lane.—Dean, Mr. Bowman Macleod, 16 George Square. Fees for all subjects, 67l. 3s.

Exeter: Dental Hospital, Castle Street.—Hon. Sec., Mr. G. A. Townsend.

Glasgow: Dentsl Hospitsl and School, 4 Chatham Place, Stirling Road.—Secretary, Mr. D. M. Alexander, 117 Wellington Street. Fees for dental subjects only, 251 4s.

Dental practice can also be obtained at the Royal Infirmary. Fee, 101. 10s.

Liverpool: University College School of Dental Surgery.—Dean, Mr. F. T. Paul. Fees for all subjects, 731.28.

Manchester: Owens College, Dental Department — Registrar, Mr. II. W. Holder. Fees for all subjects, 731. 2s.

Newcastle-on-Type.—The complete conrse for L.D.S. is now given here. Fees for lectures and practice, 671. 15s. Secretary, Lient, H. Fox.

Plymouth: Dental Hospital, Octagon.—Fees for dental subjects, 231. 2s.

The only foreign dental degrees registrable are those of the Harvard and Miehigan Universities.

Fee for registration as Dental Surgeon, 5l. 5s., to be paid on application to one of the Registrars of the General Medical Conneil.

VETERINARY.

THE way towards commencing studies for the membership of the Royal College of Veterinary Surgeons is easy for the pharmaceutical student. The Royal College (a purely examining body) conducts no preliminary examination, but all the affiliated teaching colleges are required to assure themselves that students, before beginning the curriculum, have a sound education within lines laid down by the Royal College. A preliminary examination is imposed, and the certificate of the Pharmaceutical Preliminary exempts from this. Otherwise an examination must be passed at the collego which a student enters in writing, reading aloud,

dictation, English grammar, arithmetic, English history, and geography of Europe and the British Isles, and either French, German, or Latin.

There are three professional examinations, viz.:-

The *irst*, in chemistry, toxicology, botany, sud rudimentary anatomy—equine and comparative.

The second, in the anatomy of the horse and other domes-

ticated animals, physiology, and histology.

The final, in morbid anatomy and pathology, diseases of the horse (including veterinary medicine, surgery, and therapeutics), diseases of the other domesticated animals (including veterinary medicine, surgery, and therapentics); and also a practical examination as to the sonndness and diseases of horses, the diseases of the other domesticated animals, and in the writing of certificates and prescriptions.

The examinations are conducted by the board of the Royal College of Veterinary Surgeons (Red Lion Square, W.C.), which visits Edinburgh, Glasgow, and London. The fee for each examination is 41.4s., and 11.1s. for the diploma. No one can enter for the final until he is 21, and has attended college three years. The examinations fall at the end of each year of study. Students learn the dates from the principals of the colleges, which are as follows:

ROYAL (DICK'S) VETERINARY COLLEGE, Clyde Street, Edinburgh.

Principal, Professor Thomas Walley. Fees, 43l. 1s., payable in three yearly portions.

THE NEW VETERINARY COLLEGE,

Loith Walk, Edinburgh

Principal, Professor Williams. Total fees, 471. 5s., payable in three parts.

GLASGOW VETERINARY COLLEGE, Buccleuch Street, Garnethill.

Principal, Professor James McCall. Total fees, $52l.\ 10s$, payable in three parts.

ROYAL VETERINARY COLLEGE, Camden Town, London, N.W.

Principal, Professor G. T. Brown, C.B.; Secretary, Mr. R. A. N. Powys. Total fees, 63l, a third payable at the beginning of each year.

AGRICULTURAL.

THE importance of scientific training in the principles of agriculture is now being more extensively recognised than it was a few years ago, and a small portion of our space deserves to be allotted to a few notes on the schools which have taken up the snbjects involved.

ROYAL AGRICULTURAL COLLEGE, CIRENCESTER.

This old-established institution is exceedingly complete in all its departments, and the diplomas (associateship and membership) are qualifications which are universally recognised. Indoor students pay 45*l*. per term, and ontdoor, 25*l*.

EDINBURGH UNIVERSITY.

This university has an agricultural department, and grants the degree of B.Sc. in it. Students matriculate after passing the usual preliminary examination, and take the course for the ordinary B.Sc., but one of the three years is devoted to special agricultural subjects either at the university or the Royal Agricultural College, Cirencester; the College of Agriculture, Downton; the University College, North Wales, Bangor; or the veterinary colleges of the United Kingdom. There are two examinations. The subjects of the first are—(1) Agriculture, (2) chemistry, (3) biology, (a) botany, or (b) natural history (4) geology, and (5) economic science. The second examination includes (1) agriculture and rural economy, (2) chemistry, (3) veterinary hygiene, and (4) engineering. Fees, 5l. 5s. Professor Wallace is at the head of the department.

BANGOR UNIVERSITY COLLEGE.

An agricultural department in this college has recently been richly endowed, and complete arrangements have heen made for imparting a thorough education in the science. Two years' residence qualifies for the associateship of the college in agriculture, and the education is also adapted to suit the senior and junior examinations of the Royal Agricultural Society, examination for the diploma of the Highland and Agricultural Society, and the examination of the Surveyors' Institution. Valuable scholarships are offered by the Royal Agricultural Society, for particulars of which apply to Ernest Clarke, Esq., 12 Hanover Square, London, W.

DURHAM COLLEGE OF SCIENCE.

Lectures in agricultural chemistry are given by Mr. W. C. Mackenzie, D.Sc. These, with the practical work, include the analysis of food stuffs, manures, dairy produce, &c. Books recommended: "Elements of Agricultural Chemistry and Geology," by Johnstone and Cameron; Johnson's "How Crops Grow, and How Crops Feed;" and Fream's "Rotbamsted Experiments."

YORKSHIRE COLLEGE, LEEDS.

Quite recently an agricultnral department has been added to the college, and three schemes of study have heen formulated:—(1) A winter course, fees 8l. 18s. 6d.; (2) a one year's course, fees 27l. 6s.; and (3) a two years' course, fees 52l. 10s. There is a separate course in veterinary science—fee, 3l. 3s.—which local chemists as well as manufacturers would find to be advantageons.

BRITISH PHARMACISTS ABROAD.

For the benefit of those who may at any time go abroad we may state that the Minor certificate of the Pharmacentical Society of Great Britain and the Irish Licence are recognised for registration in all British colonies and dependencies.

UNITED STATES.—The following states also recognise these qualifications: -Alabama, Arizona, Arkansas, California, Dakota (North and South), Georgia, Indiana, Indian Territory, Maryland (except Baltimore), Mississippi, Montana, Nevada, New Mexico, Oregon, Tennessee, Texas, Utah, Vermont, Washington, and Wyoming. In all other States an examination must be passed, the diploma of the Pharmaceutical college of each State being the recognised thing. The following regulations of the St. Louis College of Pharmacy are a fair representation of what is usual:-Candidates for the diploma must have four years' experience in dispensing and practical pharmacy under a qualified person. They must attend two courses of lectures in the college in each of the following subjects, and pass the class examinations in them, viz.—Chemistry, practical chemistry, pharmacognosy and botany, microscopy (optional), pharmacy, and practical pharmacy (including dispensing). The classes are held in the evenings, and the fees amount to about \$95. They must be of full age (21) and pass a final examination in the subjects of the curriculum.

GERMANY .- Like that of every other branch of science, the entrance to the domain of pharmacy in Germany is gnarded by regulations and curricula, which leave the pharmaceutical novice very little option as to the modus procendi. First of all, evidence has to he given of the attainment of a certain standard of school education in the form of a certificate, which shows the holder to have acquired a sufficient knowledge of the various departments of natural history, of Latin, and so forth. Armed with such a certificate, the intending pharmacist may enter upon his apprenticeship, which extends over three years. During this time he has to study and make himself acquainted, practically and theoretically, with all the duties of his calling, and with the principles of the sciences associated therewith, so that, after the expiration of the three years, he may be competent to pass the first special examination. This is about equivalent to the Minor examination in this country, but includes several additional subjects, and is not only viva vocc and practical, but also in part written.

The successful candidate has, however, not yet the right to conduct a pharmacy on his own account; the law prescribes for him a further period of prohation (also of three years), during which he ranks as an assistant. Following on this comes a compulsory course of study at the university, which mnst, according to law, embrace three half-years (semestres), and includes organic and inorganic chemistry, analytical chemistry, botany, materia medica, toxicology, and physics. Some of these subjects have to he very thoroughly studied, not only from the works of the first authorities, but also practically; among them are qualitative, quantitative, and forensic analysis, microscopy, analysis of food, &c.

The final examination, which is more difficult than the Major examination of this country, lasts from six weeks to two months, the candidate being examined in all the varions branches of science studied—first by papers, then practically, and again orally. The qualification attached to this, the "Staats examen," entitles the holder to conduct a business, provided that he obtains a licence; as, however, licences are very scarce, and the applications for them number thousands, the only feasible way of procuring a business of one's own is to buy an established licence. For this, again, a large amount of capital is required, and this possibility is also of little significance for the majority, who have to be content with the position of the assistant, or enter some allied husiness to which access is more easily procurable.

Although there is no insuperable reason why an Englishman or any foreigner should not carry on a business as pharmacist in Germany, provided he complies with the regulations laid down by law, yet it can be readily understood that practically it is almost an impossibility, as it would necessitate first the securing of a certificate of efficiency in certain elementary subjects, not merely by sitting for examination, such as the Matriculation of the London University, but by going through a course at certain schools which have the right at the end of such course of holding examinations and conferring certificates. For this reason the competition of foreigners with the German pharmacist upon his own ground is practically excluded, and no case is known where they have passed the various curricula prescribed by law in Germany.

FRANCE.—Here the qualification of pharmacien of the first class can only be obtained by those who obtain the title "Bachelier és Sciences" or "Bachelier és Lettres" at school, and after passing three years in a pharmacy go through a three years' conrse in one of the higher schools of pharmacy, passing the requisite examinations. This high title can, obviously, only he obtained by those who begin early; but the qualification "Pharmacien de la seconde classe" has been taken by English assistants holding appointments in An authorisation to present oneself for the examinations must first be obtained from the Minister of Public Instruction, as well as a dispensation from attending the courses of lectures and passing the "Examen de 4me" (corresponding to our Preliminary); but all the fees must be paid. They amount to over 1,200f. (481.) Candidates state in which department they wish to establish themselves. The examination is similar to the Minor, but is more representative of scientific chemistry and botany. It has been passed by a few Englishmen.

Gazette.

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Creasy & Dunsmere, Brasted, Kent, surgeons.

THE BANKRUPTCY ACTS, 1883 AND 1890.

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Ainley, Samuel Blakeley, trading as Samuel Ainley, Batley, drysalter, soap manufacturer, and cut-glass manufacturer.

ADJUDICATION.

Lewis, Edwin Alaric, Calthorpe Street, Gray's Inn Road, doctor of medicine.

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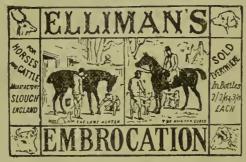
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EDUCATIONAL.

THE dispassionate study of professional curricula, examinations, and educational institutions, which the compilation of the special feature of this issue of THE CHEMIST AND DRUGGIST involves, brings out in somewhat strong relicf the peculiar relation which pharmacy bears to the cognate professions. In the days when loss attention was paid to education than to practical skill, pharmacy managed to give many good men to the learned professions; and, although all are not Abels, Edingtons, Luffs, Tildens, or Threshes, there are still enough of those of that mould produced by pharmacy from decade to decade to sustain the old reputation. We might say that pharmacy is a knapsack, containing a scienco-marshal's baton; but there are few who trouble themselves about that; enough for them to get the moderate qualification which the law demands of them and make the most of the pharmaccutical life. There exactly is it that the vessel is weak.

"Chemist by examination" and by public announcement is all that some make of their education. It is a poor beginning of the benefits which their training can bring them. We know too well the strnggle which many have to get recognition in the shape of an income which a foreman artisan would think miserable; but is that not reason enough to compel the full utilisation of the scientific and general knowledge possessed by the average chemist and druggist? It cannot be said that all do make the most of their position. The retailing of drngs and sundries, and the dispensing of prescriptions, when they get them, is not all that they are competent for. Their education and training bring them into touch with medicine, science, dentistry, and veterinary practice, in all of which a field of public service is open to them. To a limited extent the field is cultivated already, but the point we would urge is that by adding to pharmaceutical knowledge a general acquaintance with the practice of medicine, dentistry, and veterinary hygiene, as taught in schools and hospitals, the chemist and drnggist would be better equipped to render that service which the public now seeks from him. Concurrently he would increase his returns, and that without entering into competition with his professional relatives in the higher branches. It cannot be denied that the chemist is looked upon by the public as a sort of handy-man who can give safe advice regarding many simple ailments, and nothing short of a regeneration of human nature is likely to alter that common belief. The reasonable thing, therefore, is to make the best of it.

But the question occurs: Is this conduct politic or dignified enough for the educated chemist? Certainly it is. As long as the public require the chemist to be educated, and yet demand their thirteenpenny-ha'penny patents at 3d. discount, its sixpenny articles for $4\frac{1}{2}d$, and quinine at half-acrown an onnce, payment for the chemist's service must be songht for in some other channel, and what more legitimate than the development and utilisation of his professional knowledge? He may conscientionsly report on a water which is causing intestinal disturbance in a locality; why not also remedy the disturbance?

Elsewhere we advise pharmacentical students not to content themselves before entering the calling with the somewhat narrow Preliminary examination which the Pharmaceutical Society imposes, but to pass one of higher standard—such as the Cambridge or Oxford Locals—which will afterwards be recognised by the General Medical Conneil. By doing this, the pathway to any higher branch is made clear. It would also be of great advantage to assistants if they could arrange to attend a few of the classes in a veterinary collego—such as veterinary medicine and surgery, and physiology. Such classes can be attended in Edinburgh and London for a few guineas, and elsewhere there are lectures on equivalent subjects. The benefit which may thus be obtained can only be fully appreciated by those who are acquainted with rural pharmacy

but even in large towns a veterinary section is a profitable addition to pharmacy. Much the same may be said in regard to dentistry.

This is one line of thought that our educational information creates. Another has to do with the education itself. That is by no means on the down-grade. Students in all departments, who are now entering schools and college, find more extensive knowledgo demanded of them, and there is no immediate prospect of a greater return for their outlay of brain and bullion. Students, as a rule, think less of futnre than of present troubles. Better for them that it is so. Their best incentives are a whole-hearted interest in their immediate work, and a determination to do their best. Let them seek for honour, by all means; but the first plank in the educational platform is thoroughness, which also spells industry. This is as necessary for after-life as it is for the immediate purpose-attainment of the examinational standard. Nothing is more short-sighted than dilly-dallying dnring college-time. Fools they are who think that a little hard "cram" will make up for earlier idleness. Qualification is a bill which must be met sooner or later, when energy is spent, and the demand is urgent.

One is tempted to think sometimes that the student is rather a petted child. Seldom is he called upon to pay the full value of his education. Schools, colleges, and universities are richly endowed, in some cases to such an extent that the fees represent scarcely a fourth of the cost of the education provided. All that skill and knowledge can do to make theory attractive and practical is done, and the whole object is to provide the student with a capital which will yield him a life interest, limited only by his own energies. Scholarships are strewn on his path as thick as the leaves of Vallombrosa. If he is poor, and has no friend or help but his own ability, if that be worth cultivation there is no reason why it should lie fallow. Almost every school in the country has special paths for such men. Everywhere there is temptation to advancement, and the only return asked is honest industry. That is the October keynote the kingdom throughout. And we cannot strike a oetter.

THE TUBERCULIN SUPERSTITION EXPLODED.

It has come to be so invariably the case that one vivisector's experiments controvert the conclusions which his predecessor had "established"—that is the technical expression-from his investigations that no one takes much notice of the circumstance. We assume that this conflict of testimony is somehow helping us on the road of scientific progress. But the controversies which have arisen in reference to Dr. Koch's tnberculin have aroused something beyond medical interest. Laymen of all kinds, from emperors to editors, have concerned themselves with tuberculin, and have committed themselves to confident anticipations of its success. One by one their hopes have crumbled, and Dr. Koch's disciples have long since abandoned the boast of being able to cure consumptive patients, and have had enough to do of late to defend themselves against charges of killing them. But they claimed as a solid, hard rock of testimony the discovery that the tuberculin might at all events be relied upon as a trustworthy aid in diagnosis. It has been asserted from the first that the rapid increase of temperature which it induced in certain patients soon after inoculation might be accepted as incontrovertible evidence of tho tuberculous character of their diseaso. It was a heavy fall from the early hopes of the Kochists to have to depend on this triumph only; but this

last week has seriously damaged, if it has not entirely destroyed, this final bulwark of the faith in tuberculin. The blow comes from a quarter whence it was little expected. It is dealt unmercifully, with all the support of coloured lithographic diagrams, by Professor G. T. Brown, the Principal of the Royal Veterinary College, and chief of the Veterinary Department of the Board of Agriculture of this country, iu his official report just issued. culosis in animals is a disease very difficult to diagnose; but, in view of opinions held by some authorities, that the consumption of the flesh of tuberculous animals may transmit the disease to human beings, its prompt recognition is of great importance. Hence, when it was reported that the injection of Koch's fluid caused this rise of temperature in tuberculous auimals, experiments were commenced at tho Royal Veterinary Collego for the purpose of determining how far this test might be relied on in the numerous cases in which the symptoms are just sufficiently marked to excite suspicion without affording the evidence of the existence of the disease which would justify the slaughter of the animal. Thberculin was injected into guinea-pigs, pigs, heifers, steers, cows, bulls, and horses, which met the requirements indicated. The temperature was noted, and ultimately the animals were all killed and carefully examined. Each experiment is fully detailed and illustrated in the report, and the whole series is summed up by Professor Brown as follows :-

It is evident from these investigations that the injection of tuberculin does set up a certain reaction in tuberculous animals; but it is also certain that a similar and sometimes a more decided reaction is induced in animals which are free from tubercle, and it is to be observed that the amount of this fluid which may be injected (assuming it to be of uniform strength) bears no relationship to the reaction obtained. . . Only in one instance did a diseased animal give as great a reaction as the healthy ones, and in most cases the reaction was greater in the healthy than in the diseased. It cannot, therefore, be said that the injection of tuberculin adds to our means of detecting tubercle in those obscure cases of the disease in which its use was expected to be of the greatest value.

The one fact that remains, therefore, nndisputed about tuberenlin is that it is capable of exciting a feverish condition in men and animals, sound or ill—a property which it shares with many noxious substances.

BROKERS AND THE LAW.

BROKERS seem to be the spoiled children of commercial society. For centuries they have been petted and protected by the Legislature, their stock-in-trade need be nothing more than a hammer, they can limit their risks as they think fit, and whenever they choose can shift them on to their principals. They charge a commission to both buyers and sellers, and rnle both with a rod of iron. They are not liable to be plagued, as other men are, by prosecutions under Acts which apply to trade generally. They may sell any adulterated or spnrions foods or drugs which come into their nets, and under any names which it may please them to adopt in their catalognes; and yet, because they sell in tons instead of in ounces, they are not to be subject to the pains and penalties to which other traders are subject. We have this week another illustration of the curious loniency with which they are regarded by the anthorised administrators of the law

Mr. Commissioner Kerr, the keenness of whose legal

acumen no one will question, though it is not infallible, has given a judgment from which it appears that brokers are not responsible for accidents arising from the careless pack. ing of the goods they sell. The case of Eppy v. Lyon. reported from the City of London Court this week, scarcely justifies the legal boast that for every wrong there is a remedy. The facts, as we gather them from the report, are these. A firm of chomical brokers sold some vitrlol to somebody in the Old Kent Road. They employed a firm of carriers to cart the goods from the docks to their destination, and, as a consequence of one of the drnms being defective, a carman employed on the job was injured by some acid which had looked. The carman sued the brokers for damages. Counsel for the latter does not seem to have disputed the facts alleged, but he argued that no liability could attach to his clients. They were merely brokers, and the plaintiff was not in their employment. The principal of the defendant firm is reported to have maintained before the court the curious doctrine that "it was nothing to do with them whether the acid was dangerous or not. They sold it as it lay at the docks, and were only acting as brokers." We do not, of course, hold the law responsible for this gentleman's interpretation of it, but the troublesome fact is that Mr. Commissioner Kerr appears to endorse it. He said: "It would be awkward if brokers were to be held liable for everything arising in connection with the delivery of goods they sold. No, that would not do. He must find for the defendants, with costs."

Surely, this is a hard saying. Are we to nnderstand that the defendants escape responsibility because they describe themselves as "brokers"? As far as the public is concerned, they are the same in all respects as dealers in the acid. They hold, either on their own account, or for some undisclosed and, we suppose, equally irresponsible principal, a stock of vitriol at the docks. They sell some of this to somebody in the Old Kent Road, and, in consequence of bad packing, somebody gets splashed with the acid on the way. There may have been a dozen good defences to the particular action we report. We can quite conceive that it might have been more technically correct for the p'aintiff to have. sued his employers, and for them to recover from the brokers But Mr. Commissioner Kerr decided the case, as we understand, on the broad ground that brokers were not responsible at all in such a matter. We suppose we must accept this dictnm as legally soun l, but it seems to us to rest on a principle which must be obscure to that section of the world's inhabitants who are neither brokers nor jndges.

BATTLE'S VERMIN-KILLER IS NOT A PATENT MEDI-CINE.—That point has been happily decided in the finniest Pharmacy Act case we have had to report. The case tried at Southend does not shed much glory on the legal profession as represented in that county court by the judge and the counsel for the defence. The argument of the latter was childish in the extreme, and the learned gentleman who put it forward coolly told the judge when he had decided against him that he cordially agreed with every word his Hononr had said. If courts of law are simply provided for the sport of lawyers this sort of performance might be tolerated. But from a public point of view, it was hardly decent that Judge Abdy should have found this an occasion for complimenting the frivolous advocate. The judge himself seems to have had but a foggy idea of the Pharmacy Act which be was called upon to administer, and this circumstance detracts somewhat from his earnest recommendation that "that excellent Pharmaceutical Society" should strictly enforce it.



4 New Tysson Street, Bethnal Green Road, E., sought to recover 7l. 10s. for damages he had suffered, the responsibility of which he said rested with the defendants, Messrs. Robert Lyon & Co., chemical brokers, 2 St. Peter's Alley, Cornhill, E.C.

Mr. Hurd, who appeared for the plaintiff, said that on May 11 he was in the service of Messrs. Tingle, Jacobs & Co, the carriers, as carman, and he went, to the order of the defendants, to deliver a quantity of caustic acid, as he afterwards found it out to be. He had to take it to a firm in the Old Kent Road, and, while slinging one of the cases, the defendant's man, who was assisting him in the unloading, slung the case round, which caused some of the liquid to squirt into his face. It was at the bottom of the van, having eaked out of one of the drums, which was defective. The hemical went over his clothes and boots, which were so orrned that he could not use them. His face, too, was marked, as well as his eye. He was laid up for several days. It was, in his opinion, highly daugerous for the defendants to send such dangerous chemicals about in defective drnms. The defendants had offered him a sovereign, which he

Mr. Edward Swain, for the defendants, snbmitted that the plaintiff knew the dangerons qualities of caustic acid, and took the risk upon himself.

The plaintiff said it was not until after the accident that the knew the drnms contained a dangerons substance. There

was nothing on the drnms to show it.

Mr. Swain urged that no liability could attach to the defendants under the circumstances. If anyone was liable, it was the plaintiff's employers, and not the defendants. The defendants were merely chemical brokers, who sold the anstic acid in question to a firm, to whom it was being delivered when the plaintiff met with the accident. The man assisting him was not in the defendants' service, but as employed by the persons who had purchased the acid. The defendants, it was true, employed Tingle, Jacobs & Co. to carry the acid from the docks to the Old Kent Road, but that did not give the plaintiff any light of action against the defendants, who, themselves, never employed the plaintiff

Mr. Commissioner Kerr confessed if that were so he did not see how the plaintiff made the defendants responsible.

Mr. Swain: Neither do I.

Mr. Hnrd thought it was quite clear the plaintiff could not sue Tingle, Jacobs & Co. He contended there was negligence on the defendants' part in not having the caustic acid stored in proper vessels.

Mr. Swain said the defendants had no more to do with

the goods after they were sold.

Mr. Hurd: But surely they ought to see that the stuff is not carried through the streets of the City improperly!

Mr. Lyon, the defendant, was called, and stated that it was nothing to do with them whether the acid was dangerous or not. They sold it as it lay at the docks, and were only acting as chemical brokers in the matter.

Mr. Commissioner Kerr said it would be awkward if brokers were to be held liable for everything arising in connection with the delivery of goods they sold. No; that would not do. He must find for the defendants, with costs.

A WIFE'S LIABILITY.

WE have previously reported the case of Harris v. Drake, tried in the Exeter County Court, before his Honour Judge Edge. It was a claim by Mr. Harris, chemist, for 71. 128. 9d. for medicine and mineral waters supplied to the wife of Mr. C. H. Drake, lately a solicitor in the city. Judgment was obtained in 1890, and 5l. was paid on account of the deht and costs by someone who, defendant alleged, was Mr. Drake. An application was afterwards made for a new trial, on the ground that Mrs. Drake incurred the deht as the agent of her husband. The new trial was granted, and came hefore the court last week. There was no denial of the goods being supplied. Mr. Harris said he gave credit to Mrs. Drake on the understanding that she made herself personally liable for payment. She asked for the accounts to be sent in monthly. Mrs. Drake said she had property when she was married, and an allowance from her father. The property had wholly gone; and she ceased to derive any henefit from it some years since. The allowance from her friends was discontinued on her father's death in 1875. She denied that she ever intended to make herself personally liable for this debt. The judge said he did not think there was evidence that defendant ordered more than goods required for the house, and that she had authority from her hushand to obtain. Mr. Burch, for the plaintiff, said it was generally understood that Mrs. Drake had a large separate estate. His Honour said that would make no difference. Strictly speaking, a tradesman ought to ask a lady ordering goods if she had a separate estate and was willing to become liable for payment. He knew the difficulties tradesmen laboured under, but, unless they did as he suggested, they must, until the law was altered, take He hoped the law would be speedily altered. If a married woman had a separate estate, and could pay, he thought she ought to be made to pay. Mr. Burch asked if it was not necessary for defendant to prove that she was merely acting as agent. The Judge: No. If the wife orders ordinary things for the household it is presumed that she is acting as an agent. The law assumes that the wife is an agent for domestic purposes. Mr. Burch having mentioned a recent judgment by Justice Williams, his Honour said he would reserve his decision on the points raised.

The next day his Honour said he had referred to the jndgment to which Mr. Burch had called his attention. He was of opinion that the articles supplied might reasonably have been purchased for housekeeping purposes, and that it did not appear that Mrs. Drake had any property which it could reasonably he presumed she intended to hind. On these two points, therefore, he was against the plaintiff unless something more convincing could be brought forward. Judgment, however, would not be entered for a month, so that Mr. Burch might have an opportunity of producing

further evidence.

SALE OF VERMIN-KILLER BY AN UNQUALIFIED PERSON.

At the Southend County Court on the 8th inst. before his Hononr, Judge Abdy, Mr. C. Langley Flux appeared in support of a summons taken ont by the Council of the Pharmaceutical Society of Great Britain against Henry White, of 68 Park Street, Southend, to recover a penalty of 5l., under section 15 of the Pharmacy Act, 1868, for keeping open shop for the retailing, dispensing, or compounding of poison. Mr. Willis appeared for the defendant.

Mr. Flux stated that on July 8 last defendant sold to a Mrs. Schmidt two threepenny packets of Battle's verminkiller, which contained strychnine, one of the poisons enumerated in the schedule to the Pharmacy Act of 1868. The defendant was not a chemist or druggist, and was therefore liable for the penalties imposed by section 15 of the Act. This sale of Battle's vermin-killer led to a serious result, for it became the means by which the purchaser terminated her

Mr. Willis: I will admit that the defendant did sell a packet of Battle's vermin-killer on July 8 last. My case is that he is entitled to sell it.

His Honour: Do you admit that it contains strychniue?

Mr. Willis: My client does not know its contents.

His Honour: The case had better be proved.

Mr. John Harrison, coroner for East Essox, was called.

Ho said he conducted the inquiry concorning the death of Mrs. Schmidt. The defendant was examined on that inquiry. He (witness) produced the original depositions. Defeudant deposed: "I am a chemist and druggist, and carry on business at Southend, Essex. On July 8, 1891, I sold to Mrs. Schmidt one threepenny packet of Battle's vermin-killer. This contains strychnino amongst other ingredients." The jury found that the cause of Mrs. Schmidt's death was strychnine poisoning. Dr. G. F. Jones, who attended Mrs. Schmidt, said the cause of her death was strychniue poisoning.

Miss Schmidt also gave corroborative evidence.

Mr. Willis, addressing his Hononr for the dofence, said: The point we have to determine is as to how far the defendant is liable under the present proceedings. I may take it that he did sell to this nnhappy woman certain packets of Battle's vermin-killer. Of courso he was quite unaware of the disastrous effects that would ensue from tho sale, and I take it, sir, the only question we have to consider is whether he was right or wrong in selling those packets to her at the time. Now the defendant is a chemist practising or having a shop-

His Honour: Was he entitled to sell without a certificate? Mr. Willis: That is the whole point in the case. peculiar feature in this case. His case is not within the scope of the Act as it appears before you. I have a copy of the Act, sir, and it will be for you to say whether he is not entirely absolved and freed from the proceedings that have been taken here (very properly taken, I admit) for this simple reason—and I think, sir, though you may rather doubt my argument now, yon will he hrought round to agree with me-the defendant has a licence for the sale of patent medicines. The question will he whether, holding that licence, he is not entitled to sell Battle's vermin-killer. Other persons sell Battle's vermin-killer. Ironmongers, oilshops, and any miscellaneous shopkeeper sells Battle's vermin-killer.

His Honour: Without a licence? Mr. Willis: Without a licence.

His Honour: Do you say a person is entitled to sell that

without a licence?

Mr. Willis: That is my point, sir. Without a licence. So that anyone hent upon self-destruction can go into any shop, no matter whether it is a chemist's shop or not, and get this poison. Now, sir, how can this defendant be made liable nnder these particular proceedings-15th section of the Pharmacy Act, 1868. This is a most useful Act; but how can he be made liable when other persons are daily vending this deadly substance?

His Honour: But he professes to he a chemist and

druggist.

Mr. Willis: Oh, yes, sir. Of course I don't hlink that part of the question for one moment, sir. But as he has a licence to sell this, as I submit to you-

His Honour: But he is not registered.

Mr. Willis: No. But as I submit to you he has a licence to sell a variety of other substances that come under the name of patent medicines. Now, sir, I put it to you. How can you convict him under this Act, hecause he protects himself by having a licence to sell patent medicines—this amongst the number? As I said before, it is a very pregnant fact—a most significant fact—that any oil-shop, any ironmonger, anyone in fact, can sell this composition without hringing themselves within the scope of the Act. Of course, sir, there has been a very melancholy termination to this case, and no one can deplore it more than I do and my client does, but ho is entirely innocent of that. He didn't know when he gave this poor woman the poison what she would do with it, and it is proved that she was insane at the time she bought the poison. If he had not supplied her she could have gone to the next shop and got it, and my contention on the part of my client is that I am entitled to sell this as I have got a licence.

His Honour: Not if you call yourself a chemist. That is the point. You may as a grocer, you may as anybody else, sell it without a licence, but if you profess to be a chemist and sell this without a licence you hring yourself

within the Act.

Mr. Willis could not see why ho should come within the scope of the Act, simply because he was a chemist, when he had a licence to soll patent medicines. His point was that his client had a right to sell this substance. His Honour: Well, I think I shall show you you are mis-

Mr. Willis: That is of course my misfortune, but I put it plainly and strongly to you. I say I have a right to sell it. I stand before you as a registered chemist.

His Honour: No. That is ridiculous. We must brush away cobwebs of that sort.

Mr. Willis: Well, sir; I don't care. For the purpose of my argument I stand before you as a chemist.

His Honour: You may stand before me as somebody who has a licence to sell Battle's vermin killer.

Mr. Willis: The question is, have I, or have I not, a right to sell Battle's vermin killer?

His Honour: No: not as a chemist.

Mr. Willis: I don't stand before you as a chemist—(loud laughter)—but as a licensee.

His Honour: That is a different thing altogether.

Mr. Flux produced a packet of Battle's vermin killer, which he said had not the patent medicine stamp on it; surely they would not label a patent medicine as a killer. (Lond laughter.)

His Honour (to Mr. Willis): Oh. I've heen making a mistake. I thought you were going to show me that you

had a special licence to sell Battle's vermin killer.

Mr. Willis: Oh, no, sir. Pardon me. I didn't say that. His Honour: Surely you are not asking me to he fool enough to call Battle's vermin killer a patent medicine, are you? I always say this, that if you want to see an arrant jackass and an idiotic hlockhead, you must go to the County Court and look at the Judge who is sitting there. (Loud laughter.)
Mr. Willis: I am afraid, sir, having come to Sonthend, I

am going to stultify

His Honour: I will carry it further, and say that many people must expect me to be such. for I have the most extra-ordinary arguments put forward. They must think I am a very squeezable man or a semi-blockhead. I would not listen to that. You cannot raise such an argument.

Mr. Willis: I do, indeed, sir.

His Honour: I am dead against yon.

Mr. Willis: I have been before you a great many times,

sir, and you know when you say that I-

His Honour: You misled me with that word licence. That is not a patent medicine, except for mice, and it kills them. (Laughter.)

Mr. Willis: If you don't entertain my argument, sir, of

course, I am nowhere.

His Honour: You know it would never do. I cannot.

Mr. Willis: Of course, you know I never keep up a

His Hononr: Oh, no. You are a most excellent advocate, and you always do your very hest for your client. (Laughter.) I am not saying It otherwise than in earnest. are bound to put the case before me on hehalf of your client in the best form, and you certainly made an impression at one time, hecause of the mistake I made.

Mr. Willis asked that the smallest possible penalty might

be imposed.

His Honour said this was a subject that should be im-

pressed upon the minds of the public.

Mr. Flux said the proceedings against White were not taken for calling himself a "chemist." Mr. Willis had stated that grocers and other persons could sell this Battle's vermin-killer without a licence, but that was not the fact; and, if his Society got evidence of any grocer or other person vending it, they would at once set in motion proceedings for recovering the penalty.

His Honour: I thought so. It would he a blot on the

Legislature if such a state of things were allowed. I am very glad to hear it. Let a grocer come hefore me, and I should be glad—well, I won't frighten them—but let one come before me who has sold poison resulting in the death of the person who huys it, then I shall he happy-well, I won't say that-hut I will inflict the penalty which the Act

says I cau. Mr. Flux pointed out that hls Hononr had no option in the matter of the penalty. If he convicted, he could do no other

than inflict the maximum sum.

His Hononr, in summing up, said he was very glad to set this Act was being enforced, and that it would be brough to bear against all persons who sold poisons or compositions

containing poisons injurious to life. It would have been a lisgraceful thing if the Act could have been read in the vay snggested by Mr. Willis -that anybody who was not a chemist could sell the poisons; and all he could say was hat if any grocer or others camo before him as having sold Battle's vermin-killer, without being registered, "woe betide them," because that excellent Pharmaceutical Society would come down upon them and prosecute them, or bring in action for the penalty; and it was right and proper that t should be so. This was a very wholesome and beneficial act, and the idea that unregistered persons could sell poisons and poisonous substances in the most reckless and mproper manner over the counter, without being punished, vas a terrible one, and this Act had been passed for the ourpose of stopping all that. Let it be generally known hat the Pharmaceutical Society had got its eye upon the proper and strict carrying out of the Act, and if they found hat any persons were making or selling this Battle's ermin-killer without being registered, they would proseute, and upon conviction insist upon the penalty. Unforunately for the present defendant, he had brought himself ompletely within the Act. It was true he had got a licence o sell patent medicines; but that was a thing by itself altoether, and did not make him a qualified person to deal in oisonous substances. He could not do other, after hearing he evidence, than say the case was proved beyond all doubt, nd, as a matter of fact, he found the defendant was liable. Mr. Willis: I must say, sir, that I cordially agree with very word your honour has said. I have done the best I onld for my client; but having done that, I cannot but say hat I cordially agree with your every word. His Hononr: Thank you, Mr. Willis. Even if a man is

egistered, he must take care and not let an unregistered

ssistant sell, or he will be just as liable.

On the application of Mr. Flux, his honour certified for osts on the higher scale.

THE GLASGOW TINNED-PEAS TEST-CASE.—AN IMPORTANT DECISION.

On Saturday last Sheriff Birnie, Glasgow, gave his decision n the case tried before him on September 2, in which falcolm Campbell, fruiterer. Gordon Street, was charged at he instance of the Glasgow Sanitary anthorities with having old to one of their inspectors a tin of green peas which, on nalysis by Dr. Clark, the city analyst, was found to contain 005 per cent. of copper, which is equivalent to 1.4 grain of

nlphate of copper per lb. of peas.

His Lordship said:—By the third section of the Food nd Drugs Act, 1875, " no person shall mix, colour, stain, or naterial so as to render the article injurious to health, with ntent that the same may be sold in that state, and no person hall sell any such article"; and in this complaint the respondent is accused of selling tinned peas coloured with alphate of copper in breach of the Act. It is admitted that he peas were so coloured and that the respondent knew it. t is right to state that there was no concealment, the tablet pearing "a minute quantity of copper has been used by the nannfacturer to improve the colour of the peas, but they are guaranteed not injurious." The analysis brought out 4 grain per lb. The respondent objected that what he old was peas and water, whereas the analyst has analysed only the peas; but what is to be analysed under the Act is he "sample of food," and the peas were the sample of food, the water being drained off either before or after cooking. The only question, therefore, is, were the peas rendered njurions to health? In England and in this country there have been a few convictions in the Police and Sheriff Courts or selling similar peas, but I am asked by both sides to consider the present case as the first in which the defence of non-injury to health has been matter of exhaustive nquiry. It is admitted, on the one hand, that sulphate of copper in large doses is a poison, and, on the other, that, although used for greening peas for the last thirty-six years, and the trade has reached 20,000,000 tins per annum, for the nost part coloured in this way, no case of serious injury has been substantiated. Ten witnesses were examined, all gentlemen of great eminence. Professors Charteris, Simpson, and Dalziel, and Dr. Russell think sulphate of copper, even n small quantities, is injurious; that a couple of table-

spoonfuls of peas eoloured as here might be so to young and delicato persons, and especially if repeated; that sulphate of copper is a cumulative poison, and that it would be unsafe to fix a minimum in articles of food. Professors Dougall, (daister, and Barlow, and Drs. Sloan and Macphee, think 1.4 grain per lb. of pease can hurt no one, and, with the exception of Dr. Barlow, that sulphate of coppor is not cumulative. All admit that the sulphate combines with the legnmen of the peas and forms albuminoid of copper, which is insoluble, and does not enter the system; but Professor Charteris and the witnesses for the prosecution think it is again dissolved by the acids of the stomach-at all events, to some extentwhile Professor Dougall and the witnesses for the defence think that is not so. Dr. Russell says the insoluble parts are indigestible, and therefore injurious. Professor Dougall admits they would to some extent be indigestible, but to an immaterial degree. Professor Simpson has met with cases of chronic copper-poisoning. Professor Dougall has had 40,000 patients through his hands, and has not met with a case. Professor Dalziel felt colic and slight diarrhoa after two doses of sulphate of copper; and Dr. Russell has felt bad effects from green peas coloured with it. The witnesses for the defence and their families have used the peas and found no bad effects. Dr. Clark was examined both for the prosecution and the defence. He does not think the courts will convict. Sulphate of copper is a medicine in doses of from to 2 grains, and may be repeated two or three times a day. Peas may be coloured by chlorophyll, but the respondent says it renders them unpalatable. In addition to the oral evidence, reference was made to several leading authorities. It is not disputed that the early opinion was that the slightest mixture of copper was injurious, but it is said this opinion has gradually charged, and has now been reversed. In Guy and Ferrier's "Forensic Medicine" (1881), page 497, it is said "the use of copper utensils in cooking has often led to the production of poisonons salts, and numerous cases of poisoning, some of which have ended fatally... The metal itself is not poisonous, but all its soluble salts, and notably salts resulting from contact with acid fruits, are." When he comes to speak of quantities, however, he seems to minimise the danger (page 503). Redmacher, he says, took 4 grains daily for eight months, with no other effect than to create a ravenous appetite and a painless diarrhœa; and Toussaint 3 to $7\frac{1}{2}$ grains morning and night for fourteen days, with no other symptom than a metallic taste, and after using various preparations of copper for six months he remained quite well. Phillips ("Materia Medica," 1882, page 538) says:—"In the French preserved peas 0.31 to 0.56 grain has been found in each tin, and by some chemists, and even medical men, this quantity has been pronounced injurious. Vulpian, however, says that any copper compound contained is insoluble and harmless, and no evidence exists to the contrary; and Gulippe, after the crucial test of eating them freely for some time, found no bad result. In a 4-lb. loaf of bread '4 to 1'8 grain has been found, and the latter amount might become serious." Taylor ("Medical Jurisprudence," 1883, page 315) says:—"In the making of preserved fruits and vegetable pickles the salts of copper (blue vitriol) are used. . . . The quantity of copper in such articles may be in sufficient to cause fatal effects, but serious symptoms of gastric irritation are sometimes produced, and in young persons these may assume an alarming character;" and, at page 213, "the copper is liable to be precipitated by certain organic substances-e.g., albumen, &c.; but some of these organic compounds are easily dissolved by acids, or even by an excess of the solution of copper salt. A portion at least of the salt of copper is therefore commonly held dissolved." Blyth (on "Foods," 1888, page 193) says:-"It will be noticed that men of considerable scientific reputation have expressed strong opinions on the subject. Nevertheless, the whole of the injurious action of coppered peas rests entirely on theory. If the copper should exist in a state of combination with some organic matter-for example, the legumen-so as to bo insoluble in the digestive juices, although the fact of such insoluble in the digestive juries, attribugit the fact of sach insoluble compound would render the peas less nutritious, yet they would have no tonic action." Wood ("Thorapeutics," 1888, page 463) says:—"The possibility of injury resulting from the use of such food (vegetables greened by copper) has been repeatedly investigated by French and

Belgian commissioners, and the general verdiet has been that no harm is produced." Professor Lehman, at the recent meeting of the Congress on Hygiene, said :- "It is not proved by one well-ohserved case that copper salts—that is to say, a quantity of 150-200 milligrammes of copporhaving entered the organism of a healthy adult at one time can cause a disturbanco in health worthy of any remark. During copious meals about 200 milligrammes of copper ean entor the body with preservos and hread without being noticed to any extent to the senses." Mestre, in his report to the Committee of Hygiene in France (March. 1890), shows that the sulphate of copper in tinned peas is equalled or exceeded in peas is equalled or exceeded in rye, wheat, corn, potatoes, and other natural foods. In France regreening of vege tables by sulphate of copper was prohibited in 1853, but after persistent struggles the prohibition was removed in 1889. On the other hand, in Germany, colonring any food with copper was prohibited in 1887. It was suggested that there were reasons for these changes in hoth countries, apart from considerations of health, and, whether this be so or not, it may be fairly argued that little useful inference can in the circumstances be drawn from what has been done in either. It is, therefore, on the remaining evidence I must chiefly depend. Has it been proved by that evidence that 1.4 grain per lb. in a tin of peas is injurious? The oral evidence is conflicting. Did I think the first three authorities quoted intended to say that such a quantity was injurious, I should doubt if the contrary opinion was so confirmed as to entitle me to act on it; bnt I do not so read the passages referred to. Only one of the three refers to peas-Dr. Phillips-and he indicates that the opinions he mentions were not substantiated. Drs. Guy and Ferrier speak of copper vessels, and Dr. Taylor, or rather his editor, Dr. Stevenson, of fruits and pickles. The other writers are all of opinion that such a quantity in peas is not injurions, and, adding to this the practical test that, although 20,000,000 tins are used annually, not one witness was brought forward to say he had been injured, it seems to me I am not warranted in convicting the respondent. The statement as to the amount consumed, and there being no proved injury, is not new; it was made by Blyth in 1888, and, as far as appears, has not been challenged, and, if correct, there is nothing in the remainder of the evidence to counterbalance it. It is not sufficient that the sulphate ln large quantities may be poisonous, or in larger quantities, or in combination with other substances, may be injurious, or that persons may have been injured without observing it or complaining. is also, of course, insufficient that there may be persons with whom tinned peas do not agree. It is to he observed that there is not, as in Germany, an absolute prohibition of colonring-matter, because in certain circumstances it may be injurious to health—the food with which it is mixed must be rendered injurious. Some may think the former is the safer rule, hut it is not our law. It was contended that the quantity may vary through design or carelessness, and that if allowed at all it will be difficult to check any excess; but I do not view this with alarm. A dangerous quantity has not been used hitherto, and there is no inducement to use it, but the contrary, and prosecutions would follow were there cases of injurious excess. Beyond this the consideration is not a ground for convicting the respondent. He is only liable if he used a quantity injurious to health. There is only one other observation. Because 1.4 is harmless in peas, it does not follow it is so in all other vegetables, and still less in fruits.

Mr. Colqnhoun asked his lordship to allow his client's

expenses.

The Sheriff refused the application, remarking that the whole country was very much indebted to both sides for the

manner in which the case had been gone into.

On Tuesday Mr. John Lindsay applied to Sheriff Birnie to state a case setting forth the facts admitted or proved in evidence, and the grounds of his decision dismissing the case, for the information of the High Court of Justiciary, to which the prosecution desired to appeal. His lordship granted Mr. Lindsay's request, and the appeal will be heard at an early date.

MESSRS. G. TREBLE & Co., shop-fitters, have removed to 59 Rhodes Street, St. James's Road, Holloway, N.

GOVERNMENT AND OTHER APPOINTMENTS.

MILITARY.-For pharmacists the opening in the army for their special knowledge is as compounders. To get this position they must enlist in the Medical Staff Corps, and wait their chance. When vacancies occur, candidates are required to pass an examination in the three R's, receive instruction for six months from a medical officer and compounder, and pass an examination in Latin, pharmacy, prescriptions, surgical instruments and appliances, and "Returns." Donbt. less a man holding the Minor certificate would be excused the pharmaceutical part of the examination. No one in the Medical Staff Corps car take rank above a corporal until he has qualified as a compounder. Pay is at the usual rate for soldiers and non-commissioned officers of the corps. For

particulars apply to any recruiting agency.

NAVAL.—There are fourteen dispenserships in the naval hospitals at home and abroad. Candidates must be not more than 25 years of age, and must hold the Minor or Major certificate of the Pharmacentical Society of Great Britain, and only Major men can have charge of stores, a dnty which adds 1s. to 2s to the daily pay. Candidates must satisfy the Civil Service Commissioners as to their physical fitness (fee 12s. 6d.). The rate of pay commences at 5s. per day, increasing to 5s. 6d. per day after five years' service, and thereafter 6d. per day every third year until the maximum of 10s is reached. Quarters are provided, and 6d per day for fuel and light. Dispensers at Malta and the Cape have 2s., Jamaica and Bermuda 3s., and Hong-Kong 4s. per day extra. Pensions are granted after 60 years of age, or after 10 years' service to those who are discharged as physically unfit. The rate is a sixth of the pay for 10 years' service, the maximum being two-thirds for 40 years' service. Sick-pay is also granted, as well as liberal holidays. Those who desire these appointments should make a written application to the Director-General of the Medical Department of the Navy, and, as vacancies occur, they will be ordered to attend at his office at the Admiralty, Avenue House, 21 Northumberland Avenue, W.C.

PRISONS.—The appointment of compounders in H.M. prisons is conferred on persons between 24 and 40 who hold the Minor or Major qualification. Salaries begin at 120l and increase to 140l. per year. Applications for full particulars regarding the appointments should be made to

the governor of the nearest prison.

Workhouses.-Dispensers in workhonse hospitals must be registered men. They are appointed by the local gnardians, and the remuneration is the same as in prison hospitals.

INLAND REVENUE LABORATORIES.—The appointments to the post of analyst in Somerset House are only granted to "assistants of Excise"—i.e., those who enter the Civil Service in the ordinary way. Candidates for the laboratory must pass a stringent examination, after which they are educated at the Royal College of Science, and in the laboratory. Salaries begin at 130*l*. a year on appointment to the permanent staff, but payruns on during education. For full particulars consult the "Civil Service Year Book" (2s), where also will be found particulars regarding all other

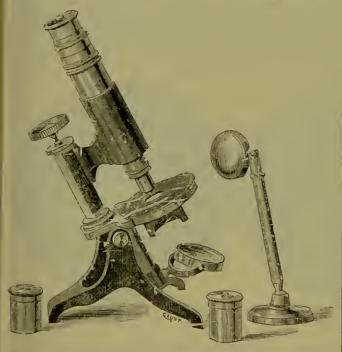
scientific appointments under the Government.

MEDICINE.—The medical appointments in the army, navy, and Indian Medical Service tempt a large number of medical graduates to compete for them annually. Vacancies are advertised as they occur, and there is a competitive examination for them. The successful persons are those who come out best, and who are of satisfactory physique. Then they attend a special course of study at Netley or Haslar, receiving 8s. per day pay, after that passing another examination. For full particulars regarding the respective departments apply to-The Director-General, Medical Department, Admiralty, 21 Northumberland Avenue, E.C.: the Adjutant General to the Forces, Horse Guards, War Office (Medical Division), Pall Mall, London, S.W.; the Military Secretary, India Office, London, S.W. In the army pay begins at 8s. per day, and may increase to 2,500l. a year. In the navy 11s. 6d. per day is the rate to commence, and 21. 15s. tho possible maximum. In India 317 rupees per month is paid at first, and may increase to 888 rupees or more with staff appointments. Retired pay is liheral in all cases.

THE MICROSCOPE IN THE MINOR EXAMINATION. By JOHN HUMPHREY.

T is well known by this time that henceforth candidates for the legal qualification in pharmacy will be expected to understand the manipulation of the microscope, and, by its aid, to identify certain objects. Already the instrument is quite familiar to many of our body, and used very extensively for profit no less than for amusement. Now, however, it is designed that all of us should at least know how to use it and master a few of the rudiments of microscopic analysis.

Many students possess microscopes, others have access to them, and, in course of time, we may expect that they will form an indispensable portion of every pharmaceutical student's scientific outfit. Novadays a really serviceable instrument may be prrchased at an extremely moderate price Most of our leading opticians have seen the advisability of meeting the growing demand for a low-priced article capable of satisfactory service. Amongst others,

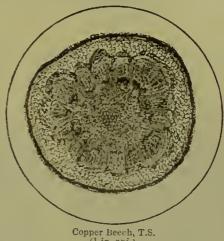


Messrs. F. Darton & Co. offer several tempting lines. They will supply a microscope that will perform well on objects much more difficult than those included in the new syllabus at as low a price as half a guinea. But it is well not to limit one's-self to immediate necessities in purchasing apparatus, and, as the use of the microscope is likely to grow, the student will find it advisable to procure one of their better instruments. Their "Student's Microscope" (shown above), with two English objectives (1 inch and 1/4 inch), sliding draw-tube and fine adjustment, glass stage, and a condenser, is supplied complete, in a polished mahogany cabinet, for 5l. With rack-work to coarse adjustment extra, the price is 1l. more. As an alternative, they offer a "Histological Microscope," with ½-inch and ½-inch objectives and two eyc-pieces for the same amounts, either with or without the rack-work to coarse adjustment. The objectives, of course, form the most important part of the apparatus, and those of Messrs. Darton are really good. I have well tested the $\frac{1}{3}$ -inch and $\frac{1}{6}$ -inch with some exceptionally fine botanical sections, and tound them in every way satisfactory for students' use.

The methods of manipulating the instrument are best learned from a friend, or a capital explanation may be found in Holmes's "Botanical Note-book." The light from a small flat-wick paraffin-lamp will be found most convenient to work by. Place the lamp to the left hand of the microscope, and practise manipulating the mirror until you have mastered the art of illuminating the whole field of viow equally. Afterwards test the various adjustments. Place a small transparent object on the stage, and focus first with

the low-power objective, then with a higher. In focussing, always move the tube downwards until the lcns almost touches the object, then place the eye in position, and screw the tube upwards until the object is in view. Learn to keep both eyes open during all observations. Sections of parts of plants are most readily cut by holding the object firmly between the first finger and thumb of the left hand and drawing a sharp razor diagonally across it with the right. Put the thinnest slice on a clean glass slip with a drop of water, cover with a thin glass circle, and your preparation is ready for examination.

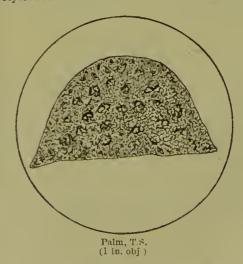
The stems of most ordinary flowering plants will serve as illustrations of exogenous growth. The buttercup, ivy, lime, holly, and many others should be examined, and will show slight variations of one type. Exceptional arrangements are to be seen in Tamus, which, though a monocotyledonous plant, has its bundles arranged according to the dicotyledonons type. The lilies, hyacinths, butcher's broom, and palms illustrate so-called endogenous growth; whilst ferns form the most familiar example of the cryptogams. In the



Copper Beech, T.S. (1 in. obj.)

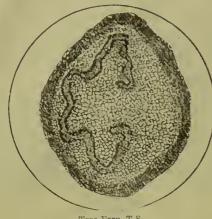
illustration of the copper-beech the bark is seen to be quite distinct, with traces of the epidermis yet remaining. The wedge-shaped bundles, with the phloëm outwards, xylem towards the centre and cambium layer between the two, have not yet coalesced to form a perfect ring. The medullary rays, with tabular cells, are well marked, and are crossed by traces of the interfascicular cambium, whilst the central pith is plainly composed of spherical parenchymatous cells. The cortical parenchyma (bet ween the phloëm and the bark proper) has the cells very irregular in size and shape.

Turning next to the palm section, we see a typical monocotyledocous structure. There is no true bark, and the



mass of parenchyma is pierced by fibro-vascular bundles, which present no definite method in their arrangement These are termed closed bundles, owing to the fact that they are destitute of any cambium layer, and can only increase in bulk longitudinally.

In the third type (tree-fern) a hardened rind takes the place of the hark found in exogens, and again we have a mass of parenchyma with closed hundles, in this case joined



Tree-Fern, T.S. (1-m. obj.)

The xylem completely surrounds the phloëm, into one. thus forming concentric bundles.

The longitudinal section of Virginia creaper, hesides illus-

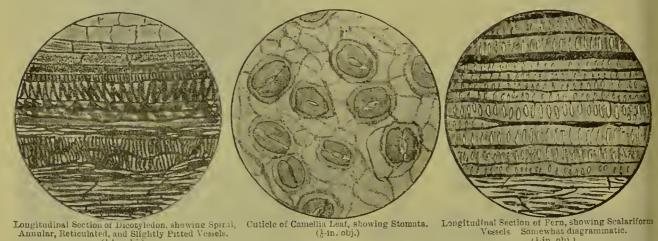
vestris, or other species, shows the wood to consist entirely of tracheides, or cells with bordered pits. The resin-passages are very distinct amidst the certical parenchyma, and readily identified in a cross-section.

Stomata may he rendered evident by mounting the cutlcle torn from the under-side of a leaf. Their development may be studied by stripping a young leaf of hyacinth when not more than two inches above ground. Note the guard-cells and the wavy structure of the cuticle, showing no interspaces.

Hairs may he procured from many plants. Cotton-wool is a convenient example always to hand. Stellate hairs are found on leaves of Deutzia, and form a beantiful object when examined hy opaque light. This is obtained hy focussing the rays from the lamp upon the object hy means of a hull's-eye condensing lens. Conical hairs grow on the stem of the elm, unicellnlar ones on the roots of the searletrunner, and stinging hairs on the nettle. Cowhage consists of the hairs from the legumes of Mucuna pruriens.

A little fresh yeast in water will show simple globular cells, with a nucleus. A drop of the liquid exnding from a freshly-cut potato-tuber contains a multitude of starchgrains with strongly-marked rings and hilum. Arrowroot and amylum, B.P., illustrate other varieties, and Mexican sarsaparilla root contains compound starch-grains.

Pollen-grains should be obtained from various flowers, hoth insect and wind fertilised, as a vast difference will be



(1-in. obj.)

trating exogenous growth from another point of view, shows specimens of reticulated, spiral, annular, and faintly-pitted vessels. Scalariform vessels are best seen in bracken or other fern cut lengthwise. A similar section of Pinus syl-

(¿-in. obj.)

seen in their structure. Peculiar pollen masses (pollinia) are found in orchids.

(J.in. obj.)

In another note I shall give some hints as to how drawings or photographs of magnified objects may be taken.

BOOKS FOR EVERY CHEMIST.

WE publish several hooks which every chemist and druggist who has a wholesome regard for his personal and business interests should not fail to secure. They deal with the analytical, legal, and practical departments of pharmacy. The analytical is covered by Mr. B. S. Proctor's "Manual of Pharmaceutical Testing" (2s. 6d., post free 2s. 9d), which contains easily applied tests for all pharmacopæial chemicals, none of which require the resources of a chemical lahoratory—simply the measures, &c., used at the dispensing-counter. The legal side is dealt with hy Mr. Alpe, of Somerset House, in his interesting "Handy-book of Medicine Stamp Duty," price 2s. 6d. or by post 2s. 9d. The practical section of pharmacy, viz. dispensing, is very well looked after in "The Art of Dispensing," which is one of the most popular books in English pharmaceutical literature. It is published at 3s. 6d. and is sent by post for 3s, 10d. Nearly all the wholesale houses stock these books and supply them at the published prices We also publish "Veterinary Counter Practice" (3s. 6d., hy post 3s. 9d.), which is invaluable as an aid in veterinary prescribing. This also can be obtained through any of the wholesale houses.

NEW COMPANIES

CUMBERLAND UMBER COMPANY (LIMITED) .- Capital 1,500l, in 5l. shares. This company has heen formed for the purpose of acquiring the interest of H. Jones in the Taylor's Grove Mines, Alston, Cumherland, and to get, quarry, smelt, calcine, and generally manufacture and prepare for market mineral substances of all kinds. The first directors are to be: Henry Jones, Alston, Cumberland; John Rylance, Bradford, Manchester; and J. J. Broadhridge, Northenden, Cheshire.

THOMAS STOTHERT & Co. (LIMITED).—Capital 10,0001. in 5l. shares. The company is formed to acquire the business of a wholesalo druggist, now carried on by Thomas Stothert at Station Road, Blackburn, Lancashire, and to carry on at that address the husiness of a wholesale druggist and drysalter, and to negotiate the purchase and sale of all ingredients and things which are necessary in the conduct of the same husiness.



Notice to Retail Buyers:—It should be rememoered that the quotations in this section are invariably the lowest net eash prices actually paid for large quantities in bulk. In many cases allowances have to be added before ordinary prices can be ascertained. Frequently goods must be picked and sorted to suit the demands of the retail trade, causing much labour and the accumulation of rejections, not all of which are suitable, even for manufacturing purposes.

t should also be recollected that for many articles the range of quality is very wide.

42 CANNON STREET, September 17.

DUSINESS has been fairly brisk this week, and there are several alterations of some importance in the prices of drugs. The principal of these are the great advance in Tinnevelly senna, and the increase in the price of English peppermint oil. To-day's drug-sales, which were rather lengthy, went off with a steady tone, and a somewhat larger proportion of goods than is usually sold was disposed of. The following are the principal alterations in the market:—Higher: Senna, gamhoge, buchu, jalap, orris, chamomiles, English oil of peppermint. Lower: Cape and Curação aloes, benzoin, gum myrrh, gum guaiacnm, ragon's-hlood, honey and beeswax, ergot, civet, cascarilla, cardamoms, camphor, cantharides, aud musk. In the hemical market prices favour buyers, citric and tartaric cids, quinine, and cream of tartar being lower. Antimony

ACID (CITRIC).—Again easier, at 1s. $5\frac{1}{2}d$. to 1s. $5\frac{3}{4}d$. per lb on the spot. It is reported from Sicily that the new crop of lemons is certain to yield a larger quantity of concentrated juice than did the last, and, as the stock of juice in Messina shows no signs of decrease, but remains at about 1,000 pipes, a rise is not considered likely.

and quicksilver are also cheaper.

ACID (TARTARIC) is held for 1s. $1\frac{1}{4}d$, to 1s. $1\frac{5}{4}d$, per lb. on the spot, according to quality.

ALOES.—Cape aloes have sold privately this week as high as 29s. per cwt. for good bright hard. Since then, however, a shipment has been received from the Cape, and at to-day's anction prices showed a decline of 2s. to 2s. 6d. per cwt. Of 48 cases offered 42 sold at 25s. to 25s. 6d. per cwt. for good hard, and from 23s. down to 17s. for fair to ordinary drossy. Curação aloes also sold at rather easier rates, from 21s. to 25s. 6d. for fair brown liver, and 11s. 6d. to 13s. for fair Capey down to 7s. and even 5s. for common over heated. Of 271 packages 245 were disposed of. A parcel of fine Capey and liver in gourds sold at 52s. 6d. per cwt. Of East Indian aloes only a few lots offered, two cases black skins from Aden selling at 10s. per cwt.

AMBERGRIS —A parcel of $1\frac{1}{4}$ oz. sold to day at 55s. per oz.

ANISE.—Five cases Chinese star-anise, genuine but mostly broken, are held for 97ε . 6d., an offer of 95ε , per cwt. being declined.

ANNATTO.—For a parcel of 65 bags of rather dull and somewhat damaged seed an offer of $1\frac{\pi}{4}d$, per lb. was declined to-day. The price is 2d, per lb.

ANTIMONY.—The market is weakening, and we hear that sales of crude Japanese have been made at the rate of 241. per ton. At auction a parcel of 21 cases retired at 27s, per cwt.

ARAROBA.—Thirty-six packages of fairly good grey appearance are held for 1s. 4d. per lb.

ARECA NUTS.—The parcel which was recently imported came up for sale to-day. The quality was rather disappointing, the seeds being rather worm-eaten and evidently badly dried. The whole of the 59 bags shown was bought in at prices ranging up to 37s. 6d. per cwt.

BALSAMS—Of Copaiba about 40 cases, mostly of recent import, and all rather below par as regards quality, were offered and bought in, dark and cloudy Bahia at 2s. 2d. per lb. Two heavy casks of West African copaiba were bought in at 1s 3d. per lb.; there were no bids for this at 9d. per lb. Peru balsam is quiet with small sales privately at 5s. 3d. per lb. At auction 3 cases unworked were bought in at 5s 9d. per lb. Tolu balsam sells privately in a small way at 1s. 2d. per lb. and good Canada halsam also at 1s. 2d. per lb.

BROMIDE OF POTASSIUM.—The position of the market is unaltered. Orders continue to come from the home trade in ever increasing quantities, so much so that makers, although they have increased their output, cannot keep pace with the demand, and are obliged to distribute their daily manufacture in fragments. The execution of heavy orders from the United States has had to be postponed owing to the impossibility of satisfying this extra demand. The principal feature, however, is that the German Bromine Convention will expire with the end of this year, and, unless renewed, the restrictions as to output will no longer exist and a very sharp competition among the makers abroad will necessarily follow.

BUCHU.—In strong demand. A parcel of 8 hales of new import, sound, rather yellowish, mixed, and somewhat stalky, sold at an advance of about $\frac{3}{4}$, viz., at 6d. to $6\frac{1}{4}d$. per lb.

CALABAR BEANS continue to sell at 3d. per lb. in Liverpool.

CALUMBA remains rather neglected. A small parcel of good bright washed yellow sorts realised 47s. 6d. per cwt to day.

CAMPHOR (REFINED).—A dull market. At auction to-day 35 tnbs Japan camphor were offered, but there were no huyers, and the whole was bought in at nominal rates. The nominal spot value is about 120s. to 125s. per cwt.; but the firm who control the hulk of the stock still refuse to accept less than 16Cs. per cwt. A parcel of 5 tons China camphor, August-September steamer shipment sold at 105s. per cwt. a few days ago, which shows a reduction in value. Japan offers for shipment at 122s. 6d. per cwt, "ci.f.," delivered weights. There is very little demand for this druz. English is unchanged in price, French sells, and German is offered at 1s. 6d. per lb.

CANTHARIDES.—Russian cantharides were hought in to-day at 3s. 3d. to 3s. 6d. per 1b. for barely fair quality Eight cases Chinese flies were also shown, and for these 1s. 2d. per 1b. is asked. New Hussian cantharides are heing offered somewhat more cheaply from Germany—viz., at 3s. to 3s. 3d. per 1b, c.i.f. London.

CARDAMOMS.—About 150 packages were offered to-day and rather less than half of this sold at very irregnlar rates, the first parcels showing fully 3d. to 4d. per lb. decline, but the remainder bringing almost the valuation figure. Ceylon-Mysore medium to boid plump pale (Mangalore character), 3s. 8d. to 3s. 10d.; medium hright long and round mixed, 2s. 5d. to 2s. 8d.; ditto smaller, 1s. 9d. to 1s. 10d.; ditto brown, partly split, 1s. 4d. to 1s. 5d.; very small to small and medium yellowish, 1s. to 1s. 4d. per lb Malabar, medium to bold yellow to pale, 2s. to 2s. 3d.; rather smaller, 1s. 11d.; brown mixed, 1s. 4d. per lb. Tellieherry, common stalky, 6d. per lb. For good Alleppeys, 1s. 5d. to 1s. 6d. per lb is asked. Seeds brought from 2s. to 2s. 1d. per lb. The exports from Ceylon between January 1 and August 17 have been as follows:—1891, 187,948 lbs.; 1890, 212,963 lbs.; 1889, 179,708 lbs.; 1838, 178,552 lbs.

CASCARILLA.—Of 87 bales, a fair proportion sold to day at lower rates—good silvery broken quill, 33s. 6d.; fair, but very sandy, 23s. to 27s.; ordinary small and damaged, 17s. 6d. to 21s. 6d. per cwt.

CASSIA LIGNEA.—A dull market, at 22s. 6d. per cwt. for fair quill.

CHAMOMILES.—Since our last report, prices continued to decline until in the early part of this week, when business in good Belgian flowers took place at 100s. per cwt. Since then advices have come stronger; and now 102s. 6d. to 105s. per cwt. is again quoted.

CHILLIES.—Zinzibur chillies are still declining in value. At the auctions 89 biles sold -medium quality at 30s., good fair at 33s. per cwt. Capitoums are also lower; 67 biles Madras sold at 16s to 19s. for smill dull to good bright red off-stalk.

CINCHONA.—Very little South American bark was offered to-day. For 30 bales genuice flat Calisaya, 1s 4d per lo. was refused, the limit being 1s. 5d. per lo. Good mossy broken Gaayaquil quills were bought in at 1s. 5d. to 1s 6d. per lb. A parcel of 12 bales badly damaged flat and split quill Maracaibo sold at from 2\frac{3}{4}d. down to \frac{1}{4}d. per lb. The case of Jamaica bark in red quill, rather broken, offered at the last bark auctions, sold at 3\frac{1}{2}d. per lb. to-day. Cablegrams from Batavia state that the exports of chechona bark from Java in July were 1,300,000 Amsterdam lbs., and in August 750,000 Amsterdam lbs. The total shipments of cinchona from Java, for the season ending June 30 are now to hand, and show that the estimates hitberto given were much below the mark. The official figures are as follows:—

Season		Private Plantations	Government Plantations	Total
		Amsterdam	Amsterdam	
		lbs.	11)3,	
uly 1, 1890, to June 30, 1891	 	6 323 561	553,255	6,877.816
, 1889 , 1890	 	4.579.787	£41.481	5,121,268
, 1888 . 1889	 	3,599,525	815,506	4,415,031
1007 1008	 	3,124,924	617.101	3.742.095
1886 1887	 	1,569,842	660,433	2 2 30, 275

The following are the Ceylon exports between January 1 and August 24 for the last four seasons:—1891, 3,429,621 lbs.; 1890, 5,295,893 lbs.; 1889, 6 194 962 lbs.; 1888, 8 067,194 lbs. Up to the present a total of 826 packages bark only is announced for next Tuesday's anctions. It is composed of 151 Ceylon, 325 East Indian, 77 Java, and 273 Sonth American Calisaya barks.

CIVET.—Easier. Of 2 horns shown to-day, 1 sold at 6s. per oz.

CLOVES—The market for Zarzibar cloves remains dull, and at the spice auctions nothing was sold. Privately fair Zanzibars have been sold at $3\frac{1}{4}d$, per 1b. on the spot. Ten cases medium dull Penang realised up to $9\frac{1}{2}d$, per 1b. at anction.

COCAINE.—The Hamburg market for crude cocaine is reported dearer. Two or three consignments have passed Southampton on the way to Hsmburg. Hydrochlorate of cocaine in bulk may yet be had at 21s. 6d. per oz.

COCA LEAVES.—Eight bales of South American coca leaves, damaged, thin and brown and devoid of flavonr, sold without reserve at 3d per lb. to-day.

COCCULUS INDICUS is reported to be selling privately at 11s. per cwt.

COCHINEAL is firm with business in Teneriffe; medium to good grey blacks at 1s. to 1s. 2d., silvers at 1s. to 1s. 1d. and fair blacks at 1s. 1d. per lb.

CREAM OF TARTAR —Still declining slowly. Best white French crystals may now be bad at 94s, per cwt. on the spot.

CUBEDS.—Rather small, dusty and stalky berries are said to have sold privately this week at 9l. 5s. per cwt. At auction to-day a parcel of that character was bought in at 9l. 10s. per cwt. The exports from Java during the last three seasons (July 1 to June 30) have been as follows:—1890-91, 1,378 piculs; 1889-90, 1,353 piculs; 1888-89, 883 piculs.

CUMIN SEED.—The advance in *Malta* cumin, which has occurred in consequence of the failure of the crop, is maintained. Privately sales have been made at 28s. per cwt. At auction to-day from 28s. to 30s. per cwt. was quoted for rather dark to good bright seed.

CUTTLE Figure —The market remains steady. Forty packages ($32\frac{1}{3}$ cwt.) from Las Palmas sold at $2\frac{3}{4}d$, to $3\frac{1}{4}d$, per lb. to-day for good pale, and at $2\frac{1}{4}d$, per lb. for pieces.

DRAGON'S BLOOD shows lower value. A parcel of 24 packages bas arrived, but it was just too late for to days

auctions. Of 17 cases shown to day 11 sold at 7l. 5s. to 7l. 7s. 6d. for good soft lump of fine fiery colonr. For dull, hard, drossy finger ont of seed, 85s. per cwt. was suggested as the price.

ERGOT OF RYE is dull of sale. Fair Spanish is limited at 1s. 4d. per lb, 3 bags very low wormy ditto sold at 1s. 13d. per lb., without reserve. New Russian is not offering yet, except at impossible rates (1s. 6d. per lb, c.i.f., being mentioned), but more definite quotations are daily expected

GAMDOGE.—Fine quality is in demand and shows an advance of 30s. to 40s. per cwt. over the last auction rates. Of 19 cases 5 were sold, blocky and partly broken pipe of fine orange fracture at 13l. 15s, rising to 14l. 10s, per cwt. For dull ricey Saigon pipe an offer of 10l. 15s, was refused at auction, but subsequently the lot sold privately at 11l.

GENTIAN.—Several parcels were shown, but no sales effected. The price runs from 15s. to 16s. per cwt.

GINGER.—African ginger has been sold at 24s. 6d. per cwt. in Liverpool. Jamaica ginger remains quiet but steady, with sales of about 90 barrels at auction at the following prices: Good medium to bold, 55s. to 79s.; fair common to medium, 45s. to 52s. 6d. per cwt. Cochin also remains stanant, with a slight demand—new dull cut root selling at 50s. for C to 58s. for B, medium part cut at 44s. to 45s. 6d. per cwt.

GUINEA GRAINS have further declined very considerably and in Liverpool 18s. per cwt. has been accepted—a decline of fully 100 per cent. in a few weeks. Since then sales are reported at 20s. per cwt.

Gum Ammoniacum.—Six cases were all bought in. For rather drossy, dark, and partly blocky drop 60s, per cwt. was named as the price at auction, but we hear that the owner now wants 75s, per cwt. For good clean siftings the figure of 30s, per cwt. was suggested.

GUM ARABIC .-- At to-day's auctions 32 packages Turkey gum were shown. For good but dnsty and yellow mixed sorts, 7l. 10s. is asked, and 5l. for small amber coloured grain. Fine pale glassy Aden sorts are held for 90s, and said to be selling at that figure privately. For a parcel of fine but dusty white Mogadore, 8l. 5s. was refused, the price being 8l. 10s. per cwt. The crop of brown Barbary gnm is now beginning to arrive, and is quoted at 48s. to 52s. 6d. per cwt, according to quality. It is said to be again a small crop, and not expected to exceed 100 tons, while in former years 300 tons was considered a fair A good deal of business has been done average. privately in East Indian gum since last auctions, and the market is reported to be in a healtbier condition. The stock of East Indian, bowever, is too large to allow of a considerable rise. Ghattis bave sold readily at 13s. to 15s. for pickings, 26s. 6d. for ordinary, 28s. for fair, and 30s. for good medium sorts. Brown Campore Amrads have been placed at 35s. to 37s. 6d., with pale sorts at 40s. to 42s. 6d. Madrat and Comrah sorts have been inquired for at 35s. to 45e., and scented Bombays at about 40s. per cwt.

GUM BENZOIN.—Of Siam berzein several lots were solt without reserve to-day, and prices ruled from 15s. to 25s lower. Penang gum also sold at from 5s. to 6s reduction and Sumatra benzoin was likewise easier. The following prices were paid:—Siam: Of 34 cases 26 sold at 11l. 10s. 1 12l. 2s. 6d. for fine bright almonds in block, 9l. 10s. to 10t for a similar parcel in smaller almonds, and 67s. 6d. to 70t per cwt. for ordinary small grey blecky siftings. Sumatragum sold at 7l. 10s. to 8l. for fair to good bright pale slightly false-packed seconds, 6l. 15s. to 7l. for rather dull seconds and 70s. for ordinary false-packed thirds. False-packet Penang brought 64s. to 65s, and good Palembang in smal boxes 53s. to 54s. per cwt.

GUM KINO.—For 2 cases East Indian kino an offer of 67s. 6d. per cwt. was declined to-day, the owner standing on for 70s. per cwt, which is the highest point lately reached.

GUM MYRRH continues to sell fairly well, but prices ar in buyers' favour. Good but rather dark Aden, picked realised from 5l. 10s. to 5l. 12s. 6d. per cwt.; small clear siftings, 50s.; fair pickings, 40s. to 45s. per cwt.

GUMMI GUAIACUM.—A parcel of 25 boxes was all dispose of: Good glassy almondy block, partly false packed wit

bark and wood, at 1s 1d. to 1s. 4d.; ordinary drossy, at from 11d. down to $6\frac{1}{2}d$. per lb. These prices are somewhat below those of the previous anction sales.

Honey.—Rather lower. Of Mexican honey in the comb, small boxes, smoky flavour, 18 cases sold at 39s per cwt. For 14 packages thick yellow candied Australian honey 35s. per cwt. is asked, while 10 packages fair white and yellow candied Italian sold at 33s. per cwt., subject to approval of Jamaica honey 31 packages were offered, the bulk of which sold at a decline of about 2s. per cwt.; good amber liquid realising 36s. 6d. to 37s.; fair, 35s. 6d.; and ordinary to dark, 28s. to 31s. per cwt. The stock of Chilian honey in Liverpool is said to have been reduced by over 2,000 barrels since the beginning of June. Hence the market is rather firmer. Californian honey has advanced in Liverpool, and fair sales have been made of medium quality at 37s. 6d. per cwt. New white Italian honey, in 1-cwt. tins, is held for 41s. to 42s. per cwt.

IPECACUANHA.—Of 61 packages offered to day 35 sold at fully steady prices: Thin wiry to fair tieshy sound, at 7s 9d. to 7s. 11d.; damages, according to degree and quality, from 7s. 7d. up to 8s. per lb.

IPECACUANHA (SO-CALLED).—The parcel of root offered at the last drng-sales as Brazilian ipecacuanha has been sold. The root is believed to be either R. scabra or Ionidium Ipecac. (N.O. Violaceæ), but it is certain that it contains no emetine whatever. The brokers affirm that, after selling one or two packages at 1s., they refused an offer of $7\frac{1}{2}d$. per 1b. for the remainder, and have since disposed of it privately at something above that figure.

JABORANDI.—Two bales good bold and fairly bright but stalky leaves sold at 9d. per lb. to-day. There is more left at that figure.

JALAP.—New York advices state that a lot of 1,200 lbs. newly imported jalap root was sold in the beginning of this month at 28c., and one of 800 lbs. old root at 31c. per lb. In London the market is firm and dearer, sales being reported at 1s. 6d. per lb. for fair Vera Crnz. At auction none was offered.

METHYLATED SPIRIT.—While from one quarter we are still assnred that offers for contracts over next year at 2s.5d. per gallon would be accepted, we have it on the anthority of one of the principal methylators that such a figure is impossible since the methylated spirit at the works, naked, costs $2s.4\frac{3}{4}d$. per gallon net. The London price, nsnal terms, is given from this quarter as 2s.7d. to 2s.9d. per gallon, according to quantity, and the country price at 2d, per gallon more.

MUSK.—A fair quantity of *Tonquin* pod-musk was sold to-day at a decline of 3s. to 4s. per oz. First pile medium to bold pods, well trimmed, thin blue skin and underskin, 74s. per oz; rather skinny and badly-trimmed grey-skinned pods, small to bold, at 59s. to 61s. per cz.

MUSK-SEED.—For 15 bags of fair quality imported from Amsterdam 3d. per lb. was the best bid obtainable. It was refused.

Nux Vomica.— For 98 bags dark and dull seed from Bombay an offer of 9s. 9d. per cwt. was refused. The price is 10s. The imports this week were 130 packages.

OIL (CASTOR).—Several parcels were shown at to-day's auctions, but no sales were effected. For fine Italian oil $4\frac{1}{3}d$, to 5d. per 1b. is asked, and for 20 cases pale I Calcutta in rusty tins $4\frac{1}{3}d$ per 1b. was refused. The Liverpool market remains flat, and prices, in the absence of business, are more or less nominal. Good Calcutta seconds are worth $3\frac{1}{3}d$ per 1b., and first pressure French oil 3d. per 1b. Calcutta mail news, dated August 25, still tells the old tale of suspended oil manufacture and falling off in the seed prices, owing to the impossibility of manufacturers to proceed.

OIL (COD LIVER).—Our Norweglan correspondent writes, under date of September 1:—"I pointed out in my last report that owing to the deficiency in the ontput of codliver oil this article would probably fetch higher prices ere long; but I did not think that any considerable improvement would take place before the autumn demand would make itself felt. It is, however, evident that stocks are very light everywhere, because the market has kept very steady

all the summer through, and sales have been made at improved prices. No surprise must therefore be felt if prices should rise considerably later in the autumn, when those buyers who have not covered themselves for their winter requirements will be coming forward. In the second half of June new season's non-freezing cod-liver oil was held for 70s. Soon after that sales were made at 72s. 6d. and 75s. per barrel, c.i.f. United Kingdom, cast coast, and it is reported that sales have been made at even higher prices. It is expected that the value will range about 80s. c.i.f., but should there be a lively demand still higher prices may b3 looked for.

OILS (ESSENTIAL) .- English Peppermint oil has again advanced in price since onr last report. We hear that the Cambridge growers will not sell below 40s. per lb, while for fine Mitcham oil 36s. per lb. is asked. The price for Japan oil has been advanced from 4s. to 4s. 3d. per lb., but for a parcel shown at to day's auctions the latter figure would still be taken. American oil, however, is offering at lower rates, 13s. per lb. being quoted for H.G.H., but we hear it said that one importer offers that brand as low as 12s. 6d. per lb. For Tonquin star anise oil 5s. 10d. c.i.f. was recently paid, and business is reported in Chinese oil, August-September shipment, at the same figure. A parcel of Japanese oil of Camphor was bought in at 27s. 6d. per cwt. to day. For Italian oil of Orange very high prices are quoted, but Lemon is offering for forward delivery at 6d, below the opening prices of the previons season. A parcel of good green Cajaput oil shown to-day is priced at 3s. 6d. per lb. Three quart bottles of fine oil of Lemongrass from Dominica (W. Indies) sold with furious competition at the fancy price of 1s. 9d. per oz. Native East Indian is worth $1\frac{1}{5}d$. to $1\frac{3}{4}d$. per oz. A transaction of 100 cases September-October steamer shipment at $1\frac{11}{3\frac{1}{3}}d$, per oz. "c.i.f. London" has recently been reported. *Citronella* oil remains dnll at $\frac{5}{8}d$. to $\frac{1}{16}d$. per oz. on the spot, with very little business. The following figures relate to the exports of citronella and lemongrass oils from Ceylon between Jannary 1 and August 17:-1891, 7,057,507 oz; 1890, 5,154,024 oz.; 1889, 5,347,008 oz.

OPIUM.—The following is a synopsis of the latest Smyrna mail news, dated September 5:—During the month of Augnst 365 cases were sold, including 165 cases selected Karahissar for the Dutch Co. Towards the close of August increased speculation drove np the prices to a very high figure. The rise has been mainly in new crop Adette and Karahissar opinm suitable for the Dutch requirements, but the Dutch test is so severe that, out of 300 cases taken for the Company in the beginning of September, only 131 passed the standard. The market remained as firm as ever at the close, except for talequale kind, on which a slight concession had been made. For fine Adette and Karahissar opium. 9s. 6d. to 10s. per lb. had been paid, and 7s. 9d. to 8s. for old and new current talequale. The arrivals of new opium in Smyrna up to September 5 were 1,940 cases, against 710 in 1890. In Constantinople on September 2 the arrivals were 803 cases against 1,273 in 1890.

ORRIS.—Higher prices have been paid for orris since our last report, and it is said that some parcels of fine white Florentine root have changed hands at 125s. per cwt. Holders are now asking as much as 135s. per cwt. for the finest picked root in casks, and 130s. per cwt. for second quality. Verona root is also somewhat dearer again,—viz. at 48s. to 68s. per cwt. according to quality. At to-day's auctions 11 bags fine white Florentine were bought in at 125s. per cwt.; bolder but yellower root is held for 112s. 6d. per cwt. Several parcels of Mogadore orris were bought in at 32s. 6d. to 40s per cwt.

QUICKSILVER.—Early in the week the principal importer advanced his quotation to 7l. 7s. 6d., at which a large business was done. Since then his price is nominal at the same figure.

QUILLAIA rather dearer. In Liverpool 30% per ton has been freely paid for spot stuff.

QUININE.—No business whatever has been reported this week; but on Friday last a lot of 5,000 oz. Pelleticr's brand, in tins, sold at 9\d. per oz, which is the lowest price on record.

RHUBARB.—The market remains steady, but only very little was offered to-day. Canton: Small to medium sound root, wormy, one-quarter dark fracture, brought 1s. 3d. per lb. Shensi: Medium to bold, round, fine coat, three-quarters pinky fracture, 1s. 9d. per lb; ditto, small to medium, pale coat, round, one-quarter dark fracture, 1s. 5d. per lb.

SALEP.—The new crop is arriving in Smyrna, and business was reported from that place (September 5) at the rate of 61.5s, per ewt.

SARSAPARILLA.—Honduras root is steady, and held at 1s. 6d. per lb. for good brands. For 14 serons shown to day, 1s. 5\frac{1}{3}d. per lb. is asked. Native Jamaica sold at 1s. 5d. for fine hright red, and 1s. 1d. per lb. for damaged pale. Mexican root is reported dearer from New York, 7d. per lb. c.i.f. being cabled this week.

SENNA .- The principal feature of to-day's auctions was the extraordinary advance in Tinnevelly sonna, of which the crop is exceptionally late. About 320 bales were offered, and nearly all sold—common and medium grades at $\frac{1}{2}d$. to $1\frac{1}{3}d$. per lb., or say 30 to 50 per cent, while for a few lots of good leaves offered fancy prices were paid, sometimes amounting to 3d. and 33d. per lb. advance. Ordinary stalky jungle to small vellowish specky leaves brought from $\frac{1}{2}d$. to $1\frac{n}{4}d$.; fair small to medium green, 2d. to 4d.; and good to very fine bold from $4\frac{1}{2}d$. up to 1s. 4d. per lb. The following official report with regard to the season 1890-91 in the Thinevelly district has just been published in India:— With a rainfall in both the monsoons equal to the average of the previous six years, the Tinnevelly district at one time caused the gravest apprehension to the district authorities. The real cause for the district having had such an unfavourable season was the irregular and abnormal distribution of the rainfall. The South-West monsoon was very deficient in Tenkasi, Ambasamudram, and Tinnevelly, while the failnre of the north-east monsoon, on which the agricultural operations of the district is mainly dependent, was more general as well as more serious. Still the season prospects would not have been so seriously affected were it not for the unreasonable distribution, and to make matters worse the rainfall in the cultivation months-October to end of December-was the smallest recorded in the past twenty years. But fortunately the rains of February and March were copious, and recorded an excess of about 4 inches over normal fall, which saved the standing crops in the more fortunate parts. The rain was very heavy on the Western hills, while in the plains it ranged from 25 to 465 inches. The Tambraparni and other rivers came down in flood, and saved the whole of the Tambraparni valley crops, which were threatened with loss, filled all the tanks and channels, secured the great cotton crop, and revived agricultural operations. But, unfortunately, the rainfall avoided the worst-affected parts-viz., Sankaranainarkoil and Nanguneri. The rainfall in March was abundant, and saved the district from distress, and Sankaranainarkoil ceased to be a cause of serious anxiety, while the prospects of Nanguneri became hopeful. The arrivals of new season's Tinnevelly senna remain small. The total receipts this week were only **153** bales.

SHELLAC.—The market closed at the end of last week with an excited feeling, and at a considerable advance, maily caused by the news of the New York fire, to which we have already alluded. For orange TN, September delivery, 93s. was paid, 95s. for October, and 96s. per cwt. for November; garnet AC on the spot realised up to 85s. per cwt. net, and button was also in strong demand. Pending the weekly auctions, which were expected to be large, business remained almost snspended on Monday; but holders were very firm. At the auctions 1,545 cases were offered, of which 1,151 sold at a rise on the last auction rates of 5s. to 6s. on orange, 4s. on garnet, and 2s. to 3s. on button lacs. The price for orange was, however, somewhat below the highest point reached privately. The following are the quotations:—Orange, worked fine, ASSL, 95% to 96%; G in double triangle, fine unworked, 100s.; dark to cakey, worked, 90s. to 94s.; seconds, worked and unworked, good to fine bright, 93s. to 95s.; reddish and blocky, 90s. to 93s.; livery to ordinary reddish, 85s. to 89s. per cwt. Garnet: fair flat, AC, 88s.; curly, TSN, 88s. A parcel of bronze lae was shown, but bought in. Button: firsts, 93s. to 94s.; ordinary thirds to fair seconds, 84s. to 89s.; dark wormy thirds, 62s, per cwt. After the sale the market became much weaker, and this quiet tone has continued up to the time of writing, and sales have been limited to retail transactions of lutton lac for arrival at 93s. for seconds, and 96s. for firsts, c.i.f. terms, and some worked AC garnet on the spot at 87s. to 87s. 6d. per ewt. To day shellac closes easier with sales of good TN on the spot at 91s, and for November delivery at 95s.

STICKLAC.—Holders have been able to obtain an advance of 2s. 6d. per cwt., 72s. 6d. per cwt. having been paid for Siam. Under date of August 25, Calcutta reports that the prospects of the sticklac crop are very bad, quantities of the insects having been killed by the excessive heat and the tardiness of the rainy exason.

SULPHUR—The market for flowers of brimstone has quieted down somewhat, and foreign brands are obtainable at 8s. 6d., while for roll sulphur 8s. 9d. per cwt. is quoted. Rough Sicilian is quoted at 114s. per cwt, c.i.f. terms.

TURMERIC.—The market has remained firm since our last report. Bengal finger of fair quality was sold to some extent at 17s. per ewt., and for split Cochin bulbs 12s. 6d. per cwt. was paid the other day.

WAX (BEES') is lower all round. Madagascar is still in ahundant supply, but only about 100 mats sold, at 5l. 7s. 6d. to 5l. 10s. for bright orange, and 5l. to 5l. 5s. for brown and wormy. Of over 100 packages Jamaica wax the bulk sold at 7l. to 7l. 5s. for good to fine even yellow, and 6l. 7s. 6d. to 6l. 17s. 6d. to 6l. 17s. 6d. to 6l. 17s. 6d. dark to bright Australian from 6l. 5s. to 6l. 15s.

OHEMICALS IN THE NORTH OF ENGLAND.

THE chemical market continues to rnle steady at hoth the Liverpool and Newcastle centres of the trade. Snlphate of copper has moved up, and the market is firmer. Soda crystals still in demand, and Liverpool prices have been advanced.

BLEACHING-POWDER.—Firm. For prompt delivery Tyne brands are offered at 7l. 5s. per ton for softwood, and 7l. 10s. per ton for hardwood casks, f.o.b. Tyne. Liverpool prices for prompt delivery are 7l. 5s. per ton in softwood casks and 7l. 10s. per ton in hardwood casks for all orders excepting American, which are quoted 8l. per ton, f.o.b. Liverpool. For delivery on rails at makers' works, Widnes and St. Helens, softwood casks are quoted 7l. 2s. 6d. per ton for prompt and 7l. 5s. per ton for forward delivery.

CAUSTIC SODA steady, and prices quoted as follows:—60·per·cent, 9l. 10s. per ton; 70-per·cent., 10l. 15s. per ton; 74·per-cent, 11l. 15s. per ton. Cream: 60-62-per-cent., 9l. 5s. per ton, for parcels of 10 tons and upwards, f.o.b. Liverpool, net cash. Tyneside: 77-per·cent. quoted 12l. 5s. per ton, and 70 per-cent. 11l. per ton, f.o.b. Tyne.

CHLORATE OF POTASH.—Firm at $5\frac{1}{2}d$. per lb., less 6 per cent., f.o.b. Tyne; and $5\frac{3}{8}d$. per lb., less 5 per cent., f.o.b. Liverpool.

HYPOSULPHITE OF SODA.—Quiet at 7*l*. 10s. per ton in 1-cwt. kegs, and 7*l*. per ton in 7-8-cwt. casks. net cash, for orders of 10 tons; for smaller parcels higher prices are quoted. For delivery in Manchester, price is 7*l*. 12s. 6*d*. per ton in casks, and 8*l*. 2s. 6*d*. per ton in kegs; and c.i.f. Liverpool, 8*l*, and 8*l*. 10s. per ton, respectively.

SODA ASH — Quietly steady at $1\frac{3}{3}d$. per degree, less 5 per cent., for 48-56-per-cent. carbonated, f.o.b. Tyne; 5l. 7s. 6d. per ton for 48-per-cent. carbonated; 52-per-cent., 5l. 16s. 3d. per ton; and 58-per-cent., 6l. 10s. per ton. Caustic 48-per-cent. quoted 5l. 2s. 6d. per ton, and 52-per-cent. 5l. 11s. 3d. per ton, all f.o.b. Liverpool, net cash.

SODA CRYSTALS.—In good demand, and prices very firm. Liverpool quotations advanced to 3l. 10s. per tou in 3-cwt. barrels, and 3l. 5s. per ton in bags, net weight, f.o.b. Liverpool. Newcastle prices very firm at late advance—viz., 3l. per ton for easks and bags, gross aud net weight, respectively.

SULPHATE OF COPPER.—Firmer, and price higher. For prompt delivery 15l. is now quoted, f.o.b. Liverpool, and 16l. 10s. per tou for forward.



Memoranda for Correspondents.

Always send your proper name and address; we do not publish them unless you wish: if you do not, please use a distinct v nom-le-plame.

Write on one side of the paper only; and devite a private piece of paper to each query if you ask more than one, or if you are writing about other matters at the same time.

If you send us newspapers, please mark what you wish us to read.

Ask us anything of pharmaceutical interest: we shall do our best to reply.

Before writing for formula consult the last volume, if you have it.

Letters, queries, &c., will be attended to in the order received.

Copper in Peas.

SIR,—I observe in your issue of to day's date that Mr. Kingzett reminded your readers of his research, in collaboration with Dr. Paul, into the effect of the sulphate of copper on the human organism when used as a colouring agent in green peas; and he points out that the results they then arrived at would be of great importance in defending a prosecution for the sale of such peas.

In my evidence for the defence in the recent case in this city, which has been freely commented upon in your journal, I pointed out, in corroboration of experiments on myself and on members of my family, the result of the experiments of Messrs. Paul and Kingzett, an account of which I obtained from the Analyst of 1877, in addition to much evidence of a like nature which has been gradually accumulating both in this and other countries since that year, when the first test-case was tried in London.

I am quite in accord with the last sentiment of Mr. Kingzett's letter, and I have no doubt that the evidence adduced by the witnesses for the defence on such lines assisted in enabling the Sheriff to enter judgment for the defender.

I am, yours truly,

JOHN GLAISTER, M.D., D.P.H. Cambridge, &c. Prof. of Med. Jurisp. and Lect. on Pub. Health and Hygienc, St. Mary's College. 4 Grafton Place, Grafton Square, Glasgow,

Scotemher 12.

Syrupus Cinchonæ-Donovan.

SIR,—This syrup helongs to a past age, hut is worthy of note as the work of one who was in his time justly held to be a master of his art, and it is a somewhat saddening reflection that in less than fifty years a once famous formula, result of the busy brain and hand of one of the earliest pioneers of scientific pharmacy, should be inquired after as "supposed to he an old Duhlin preparation." But, Fugaces labuntur anni, and the number of the Pharmaccutical Journal for October 1, 1844, to which I refer your correspondent for Mr. Donovan's elaborate essay on his cinchona syrup, has on its cover an announcement that Dr. Pereira and Mr. Fownes are ahout to commence their lectures in the Society's School of Pharmacy.

Disentangled from its somewhat verbosc surroundings of theory and explanation, Mr. Donovan's formula for the syrup

is as follows:—

Eight oz. of yellow bark in coarso powder is digested at two operations with a quart of proof spirit, and the resulting tinctures, evaporated to 8 oz., are mixed with 8 oz. of extractive, obtained by boiling the residual bark with three successive pints of water and evaporating the decoetion. A pint (16 fluid oz.) of liquid is thus obtained, to which is added

The whole having been boiled until solution is effected, the resulting syrup is, if necessary, made up when cold to 32 fluid oz., and flitered through flannel. Dose, I fluid drachm.

Duhlin, September 14. Yours faithfully, HARRY NAPIER DRAPER. Mr. J. F. Brown, Dover, sends the following formula, quoted from Beasloy's "Pocket Formulary":—"Digest \(\tilde{z}\)viij. of yellow hark in coarse powder in two successive pints of proof spirit, and press strongly; boil the residuc for half an hour with a pint of water, strain, and press; repeat this a second and third time; evaporate the mixed decoctions to \(\tilde{z}\)viij.; reduce also the mixed tinctures to \(\tilde{z}\)viij.; mix the concentrated liquors, and boil them with a solution of 55 grains of oxalic acid and 284 grains of dry quinine; add \(\tilde{z}\)xzj. of sugar and \(\tilde{z}\)iv. of gum arabic, and water q.s. to make f.\(\tilde{z}\)xxxij. of syrup, which strain, while hot, through flannel. Mr. D. considers f.\(\tilde{z}\)j. of this syrup equal to three or four ounces of the decoction."

Echoes from Mitcham,

SIR,—We have read with interest the article contained in your last issue concerning the cultivation and distillation of oils of peppermint and lavender at Mitcham. Being proprietors of the oldest established business for such products at Mitcham (Messrs. Potter & Moore, established over 150 years), we venture to draw your attention to one or two important facts appertaining to the above mentioned articles.

Although the principal cultivation of peppermint has to a very considerable extent left Mitcham proper, and gone two or three miles away, there is still a fair cultivation on the old spot, and we must express surprise that your representative should have avoided this locality absolutely, having made no reference to it whatever.

In the description also of the system of distillation, your reporter alludes to the "old system" that is adopted, and in one part of the article has laid particular stress upon the advantages to a firm using "ancient" plant. When we purchased the business of Potter & Moore, we did not consider the old stills existing on the premises of any greater value than old metal. Had your reporter paid a visit—as we think he certainly should have done—to Mitcham, he would have seen at our distillery the process which we have introduced, namely, that of distilling by steam—a process which we contend produces a finer oil, particularly as there is no chance of its hecoming "hurnt," and where we have been working night and day for the past month, drawing peppermint oil, grown on the same land helonging to the old proprietors.

In alluding to "waste waters" your reporter is also in error, as we can dispose of nearly all our peppermint water, when distilled from the white mint, at 4d. per gallon.

We must also differ strongly from your correspondent in reference to his statement that there are not half-a-dozen people living who could accurately distinguish the difference between oil distilled from white plants and oil distilled from black. We consider this a poor compliment to the numerous consumers who willingly pay double the price for a decidedly superior article.

It would no doubt he interesting to your readers to know that thirty years ago the black peppermint was a wild plant, whereas the white has been in regular cultivation for about 250 years. When the black mint was first distilled, the oil was so inferior that there was a difficulty in finding a market for it. The cultivation, however, has enormously improved, and it has practically replaced the white. It cannot, however, he said that it has equalled the white in fragrance, aroma, and purgency, the replacement heing no doubt practically due to the difference in price at which it can be produced.

We entirely agree with your reports as to the deficiency of this year's crop, and we venture to think the prices already ruling will be maintained.

We remain, your obedient servants,

September 15.

W. J. Busii & Co.

SIR.—I share in the widely-felt dislike of an ingeniously-contrived trade puff, hut I dislike more strongly still any needless waste of good material.

Therefore, I ask permission to notify that the condensed water from which the oil of lavender has been separated can, or could, be obtained from the French grower whose oddities are touched upon in your eminently interesting article of Saturday last.

In this respect Messrs. John Jakson & Co. set an examplo which I venture to think our Euglish still-owners would do well to follow. A sample which I have had in stock since December, 1887, is now delightfully fragrant, and a distilled water containing an excess of Mitcham oll of lavender does useful service in many ways. Lavender water of second quality prepared with the French oil is greatly improved by the use of about an ounce to the plut of this product, and it is a very agreeable and harmless addition to various lotious and other toilet articles.

Yours very obediently, Market Square, Dover, September 14. J. F. BROWN.

MISCELLANEOUS INQUIRIES.

120/3. A Birmingham Chemist writes a sarcastic lotter inquiring whether the Midland Counties' Chemists' Association is alive or not? Is there a president or secretary? And if not defunct, what about lectures? We do not print the letter, first, hecause it is written on all four sides of a single sheet of note-paper; and, secondly, hecanse our correspondent is clearly not asking for information solely. He could have no difficulty in discovering the secretary in Birmingham if he really wanted to know something about the lassociation. We are quite willing to consider a reasonablyexpressed and well-founded complaint; hut we do not make out how far "Birmingham Chemist" is serious.

120/15. Amicus.—The British Consul at Tamatave, Madagascar, is Mr. A. Sauzier. There are Vice Consuls at several other places in the island.

118 63. T. R. C.--Stieky Fly-gum:

							()Z.
Elemi				• •			1
Thus	• •					**	2
Linseed oil		• •		••		• •	13
Vaseline						• •	3
Honey			• •	• •	• •	• •	1

Dissolve with heat, and stir well.

- 113 40. Omicron.—All the information you require is given in this issue. There is no inorganic materia medica; but "Squire" and "Attfield" tell you all that you require to know about B.P. chemicals.
- 116/1. Schola.—See the note on the Bell Scholarship on another page:
- 117 45. Veritas.—We have no means of knowing the remuneration of Dr. Stevenson as Government Visitor to the Pharmaceutical Examinations, but it is supposed that it is according to the number of visits paid. The late Dr. Greenhow was more frequent in his attendance.
- 118/47. Inquirer.—Read the article "Scientific" will he hetter able to advise you as to books in special departments when you are well grounded in theoretical chemistry and qualitative analysis. For these subjects a number of hooks are meutioned under "Pharmaceutical."
- 119/70. Prosequor.—Glass capsules may be filled with nitrite of amyl by means of a hypodermic syringe. Then close with the blow-pipe.
- 119 59. Sanitary Inspector.—We are not aware of any certificate for sanitary inspectors other than the various diplomas in public health conferred on medical graduates. The South Kenslngton certificates in the department of the South Kensington certificates in the department of hygiene, which some artisans take, may he what you are thinking of. The following are standard works:—Parkes's "Manual of Practical Hygiene" (Churchill); Wynter Blyth's "Manual of Puhlic Health" (Macmillan); Cameron's "Manual of Hygiene" (Baillière, Tindall, & Cox).

119/9. Porto.-Liquid alholene is the special brand of paraffin oil which Messrs. McKesson & Robbins, New York, recommend for use in their Albolene Atomiser.

- 24'34. F. C.-We do not know what the fabric is called of which your weather indicator is made. It appears to be a cotton material. A draper could probably match it. The sensitive colour is produced by nitrate of cobalt.
- 116/50. H. G. S -- Colour Barometers. -- Fabrics dyed with a solution of nitrate of cobalt, or pictures drawn with that solution, are employed to indicate changes of weather. See also THE CHEMIST AND DRUGGIST, September 5, page 365.
- 116/26. Nomen.—If you want to fit your shop, as you say, artistically, you will certainly do hetter to employ a shop-fitter, who has had special experience in fitting chemists' shops, than if you get the work done hy a local carpenter. Such a man would advise you whether you can ntilise your old fittings in any way. We could not open our pages to a discussion about a particular shop.
- 119/56. J. M. W.—Tomato Sauce.—Digest 1 gallon of bruised tomatoes with $\frac{1}{2}$ lb. salt for three days. Press out the juice, and add to each quart 2 oz. of hruised shallots and I drachm of hlack pepper. Let the whole simmer for half an hour, strain, and add \(\frac{1}{4} \) oz each of mace, pimento, giuger, nntmegs, and cochineal. Warm again, and simmer for ten minutes; strain, and hottle a few days later.
- 117/27. Colocynth.—To preserve the strings in Tennis Rackets from Warping with Damp, you can do nothing hetter than give them a coating of any good flexible varuish.
- 115/72. Atropia.—There is no difficulty in cultivating Indigenous Medicinal Plants with a little care. The therapeutic actions of many of these plants given in "Squire" were obtained from specimens grown and manipulated by himself. Try Potter & Clarke, or advertise in the Exchange Column for seeds of such as are annual or hiennial, or for the young plants.

117,74. Niger.—Iadelible Ink:—

Dissolve, and add a hot solution of 1½ drachm gum arabic in 3 oz. o

See also July 26, 1890, page 136. Either of the formula takes less time, and is more easily manipulated, thau the gall ink, and both are said to he wonderfully permaneut.

116/63. J. H.—There is no method for estimating the St.ength of Essence of Renuet hut by actual experiment with equal quaotities of the same milk, noting the time required, the temperature, and the consistency of the curd.

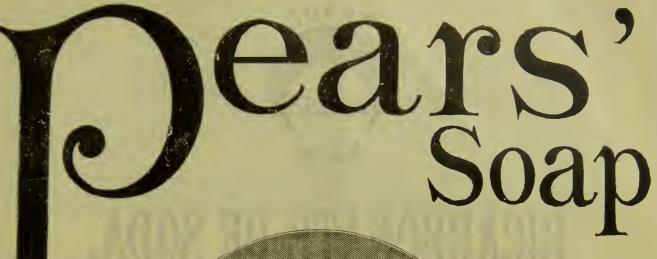
116/36. A. S.-A Liquid Dentifrico containing wintergreen and carbolic acid:-

1 oz. Onillain bark 30 drops Oil of wintergreen S.V.R. 4 oz. • • .. 5 ,, Macerate for a week, and filter.

Carbolic acid 20 grains Glycerino 3 oz.

Dissolve, and dilute with sufficient rose-water, so that the two solutions, whon mixed, shall measure 30 oz. Solution of cochincal qs. to

See also April 18, 1891, page 575.





(25 inches high.)

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PURE AND CHEAP.

ANALYSIS.

Bicarbonate	of Soda	-	-	***	***	***	97.20
Mono Carbo	onate of S	Soda	***		***	•••	1.90
Sulphate of	Soda	•••	-	-	***	•••	trace
Chloride of	Sodium		-	***	944	-	'035
Moisture	994	•••	-	***		***	.82
Insoluble	***	•••	•••	***	•••	•••	nii

PURE ALKALI,

GUARANTEED 58 DEGREES,
EQUAL TO 98 PER CENT. OF CARBONATE OF SODA.

Most economical form of Soda for the use of Printers, Bleachers, Dyers; Glass, Paper, and Soap Makers.

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THE TRUE STORY OF THE "GONDOLIERS,"

(With apologies to W. S. GILBERT, Esq.)

Air. -" No possible doubt whatever."

(Reprinted from The Magazine of Pharmacy.)

A tale is told, as I tell it here,
How once in days departed,
A highly respectable nurse aid rear
The infant son of a Gondolier
And the only child of a wealthy peer:
And when my story started,

The first was thin, the other was stout,
So, when they were together,
As to which was which there was no doubt—
No possible, probable shadow of doubt—
No possible doubt whatever.

Of Liquor Carnis(1) that nurse did hear:

The weak babe, on it nourished,
Grew strong and stout, like the son of the peer,
Till the Duke could never, with mind sincere,
Say which of the twain was his babe so dear:

So well the weak child flourished.

So rich and poor got changed about,
And thus remained for ever:
Of that there is no shadow of doubt—
No possible, probable shadow of doubt—
No possible doubt whatever.

So now the son of that Gondelier

A happy life is having,

He's been raised from his meek and lowly sphere,

And has entered now on a bright career,

As a man of wealth and a mighty peer—

Through Liquor Carnis (Caffyn). (1)

It's weight in gold 'tis worth, no doubt,
Though Bullion (bouillon) it is never:
Of that there is no manner of doubt—
No possible, probable shadow of doubt—
No possible doubt whatever.

H. W. L.

(1) Liquor Carnis (Caffyn).—A nourishing fluid, consisting of the Uncooked Juice of meat or muscle-plasma, pormanently preserved by the addition of a definite quantity of a Carbohydrate.—A valuable Food and Tonic for Infants and Invalids.—British Medical Journal.

(Copies of this will be sent by request.)

50 Holborn Viaduct, London, E.C., August 15, 1891.

In order that buyers may secure some of each of our preparations without running any risk as to any of them not selling, and consequently being left upon their shelves, we have decided that on and after August 15, 1891, we will receive back any of our goods proved to be unsaleable if in unbroken packages, and exchange for others of our manufacture as may be desired.

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Antifebrin	5 and 10 grs. in 1 dr.	Lithia Carbonate	5 grs. in 1 dr.
ANTIPYRIN	5 and 10 do.	Lithia Citrate	5 do.
Caffeine Citrate	1, 3, 5, and 10 do.	Lithia Salicylate	5 do.
Caffeine Hydrobromate	1, 3, and 5 do.	Nux Vomica	1/2 do.
Exalgine	1 and 2 do.	Phenacetin	5 and 10 do.
Iron Carb. (Formula Blaud)) 2 do.	Soda Bromide	10 do.
Iron and Arsenic	4 grs. and 3 mns. in 1 dr.	Soda Salicylate	5 and 10 do.
Lithia Benzoate	5 grs. do.	Soda Sulphate	10 do.

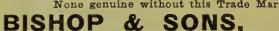
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3/

2/6

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No. 4.—Alterative Balls	• • •		24/ per	gross.
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"16.—Cough Balls			27/	22
", 17.—Cough Balls	•••		27/	
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0 Foror Ralla			24/	"
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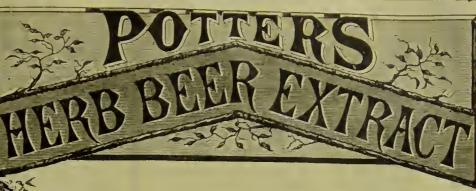
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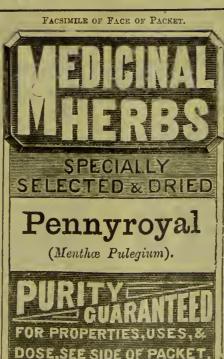


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22	Coca	and Me	eat	1					
"	Wi			ار	36/-	48/-			
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"		,, ,	,,		26/6	33/-			
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"			xtra	ct	31/6	42/-			
"		,, ,	,		49/6	66/-			
22	Coca	Lozeng	es .	•••	13/6	18/-		Ш	
,,	"	"		•••	22/6	30/-			
"	"	"		••	45/-	60/-			
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		R Wholesale	etail price	£	s. }	d.
Doz.	Kola Wine (T		48/-			
"	GI	mp. 22/6				
,,		oca				
	W	ine 36/-	48/-			
"	,, ,,	22/6	30/-			
22	Kola Wine					
	Extr	act 31/6	42/-	1		
"	,, , ,	49/6	66/-			
"	Kola and Coca					
	Wine Extr		42/-			
"	22 22	49/6				
22	Kola Lozenges					
"	" "	22/6				
22	77 77	45/-	60/-			
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	Lozen		18/-			
22	"	22/6				
22	Kola, Coca, "a	45/-	60/-			
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	Lozenges	13/6	18/-			
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Coloc, j. Cambogia ,, 1 4th	894 Pulv. Ipecac. Co.
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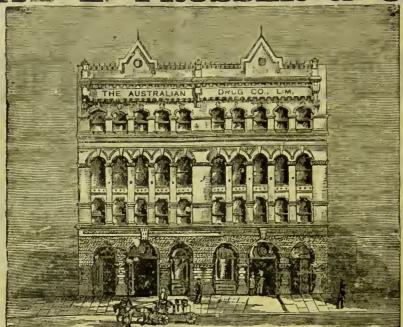
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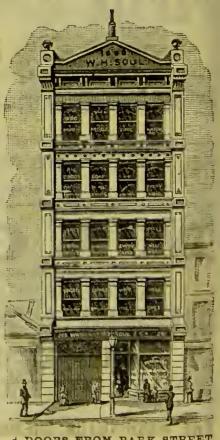
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In a continuous roll. Consisting of a layer of Wood Wool Wadding between two pieces of Sublimate Gauze. Always ready for use, and any length can be cut off with



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ROTARY PILL MACHINES



Fig. A.

Fig. A .- This invention consists Fig. A.—This invention consists in a novel and improved arrangement of Machinery, whereby any description of Fill Mass can be converted into Fills, at the rate of from 15 lbs. to 40 lbs. per hour, according to the size of the Machine used.

Fig. A.—No. 1 .. £12 12s. No. 2 .. £15 15s. No. 3 .. £20 Os.

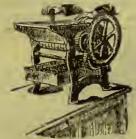


Fig. B.

Fig. B .- A small useful Machine capable of making 10 lbs. of Pills per hour, particularly adapted for persons making small quantities, at £7 15s.
Press suitable for same, £2 15s.

Any of the above can be made to ut two or three different size Pill, at an additional cost for extra Rollers and Plates.

PIPING PRESSES



Fig. C.

Fig. C. is the improved Press for Piping, hy means of which a great quantity of Mass can be Piped in a few minutes, truer than by the old method of rolling.

No. 1 £3 0s. Flg. C.—No. 2 .. £5 10s. No. 3 .. £8 10s.

NEW ROTARY PILL

As used to this date by Messrs. Holloway, Cockle, Cox, and all the principal Pill Makers in Europe, Asia, Africa, America, and Australia.

29 Murray St., New York, and Farringdon Rd., London, Nov. 9th, 1880.

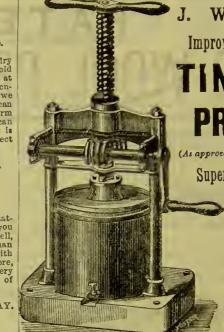
London, Nov. 9th, 1880.

Mr. J. W. Pindar,
Dear Sir,—Your letter of inquiry
came duly to hand. As I always told
you, the Pill Machine in operation at my London warchouse has given en-tire satisfaction. So have those we are using in this country. We can make smooth, round Pills of uniform size at a very small expense. I can safely say that your Pill Machine is all that you claim it to be-a perfect

Yoors truly,
A. J. WHITE.

224 Strand, 13th March, 1866.

Mr. J. W. Pindan,
Sir,—I have much pleasure in stating that the Pill Machine which you made for me answers remarkably well, as the Pills are far better made than those by hand-machines, and with much less waste. I can, therefore, confidently recommend it as a very excellent one, a great saving of labour and, consequently, expense. I remain, yours faithfully, THOMAS HOLLOWAY.



W. PINDAR'S Improved Double-Action

TINCTURE **PRESSES**

(As approved of by Wholesale Chemists.)

Superior to Hydraulic,

On account of holding the pressore.

Prices for One Gallon £3 10s.

For each additional Gallon, £1 10s. extra

Directions for use

forwarded with each article.

3 Orane Conrt, Fleet Street, Feb. 14th, 1871.

To Mr. J. W. PINDAR.

Dear Sir,—We have now used your Rotary Pill Machine about six years, and find it answers better than any we had previously used, and makes the Pills of a very regular size.—Yours truly,

T. WHELPTON.

338 Oxford St., opposite Great Portland St., Feb. 11th, 1871.

Mr. J. W. PINDAR,
Sir,—The Rotary Pill Machine and Press which we had from you (for a special order) answered very satisfactorily.—We are, Sir, yours respectfully,
JOHN BELL & CO.

NEW PATENT

"ECCENTRIC" PILL COATER.

Invented and made by J. W. PINDAR, Patentee.

By an entirely new arrangement of mechanism this machine is constructed in a manner which supersedes all others, as, owing to ite "Ecoentric" motion, the Pills.—which may be coated with Pearl, Silver, Gold, or Sugar, &c., &c.,—are thoroughly separated from each other during the process, and retain their original spherical form, whilst being thrown round the receptacle with remarkable velocity.

These machines are equally adapted for coating large or small quantities; thue, a machine constructed for and snitable for coating 20 lbs. will coat 1 lb. only with equal efficacy, and in the most satisfactory manner.

Each machine is supplied with a Drug or Powder Sifter, to be attached if required, and which, fitting to top of Pill Receptacle, is subject to the same "Eccentrio" motion as above mentioned.

tioned.

This addition will be found of great advantage in the Laboratory, being both efficient and compact.

PRICES.

No. 1.—For 2 lbs., £3 5s.; sifter for same, 7s. 6d.

No. 2.—For 5 lhs., £4 15s.; sifter for same, 15s.

No. 3.—For 10 lbs., £6 15s.; sifter for samo, £1 5s.

No. 4.—For 20 lbs., on Iron Standards, for Steam, Gas. or other power, £15 15s.; sifter for same, £2 5s.

The smallest Machines can be worked by Steam Power at a small additional cost.

Testimonials from all parts of the World may be seen on application to

J. W. PINDAR, 75 New Church Rd., Camberwell, LONDON.



Protected by Letters Patent.



Protected by Letters Patent.



THE MOST ABSORBENT SURGICAL DRESSING.

SUPPLIED LOOSE OR IN SHEETS.

This dressing is not like any other in the market, being prepared from a pure vegetable fibre with great cleansing properties. The facility with which it is removed from discharging surfaces, and its wonderful absorbing power

(IT WILL TAKE UP FIFTEEN TIMES ITS OWN WEIGHT)

make it invaluable; in fact, it is admitted by some of the most eminent medical men to be the best and most efficacious dressing known.

Supplied also impregnated with any antiseptic solution, and guaranteed that every particle is equally impregnated.

Any House Surgeon or medical man who has not yet tried it should send for a sample, which will be sent gratis, post free.

SOLE PROPRIETORS:



MESSRS. WHITAKER & DONISTHORPE,

Oat Lane, LONDON,

(PATENT ABSORBENT GAUZE AND COTTON WOOL.)

ABSORBENT COTTON WOOL.

ROLL BANDAGES.

ANTISEPTIC DRESSINGS

COTTON SPINNERS AND MANUFACTURERS OF

SURGEONS' LINTS, COTTON WOOLS,

BANDAGES, & ANTISEPTIC DRESSINGS.

WHEAT BRIDGE MILLS.

NEAR CHESTERFIELD.

TRADE MARK.

Depot-55 Fann Street, Aldersgate Street, London.

NOW TO TIME ORDER

CHEAPEST

BECAUSE

BEST.

STOCKED BY ALL THE LEADING HOUSES.

PRICES-SINGLE. 8,6 10/6 14/ 18/ 21/ per doz.



SOLE MANUFACTURERS-

THE

LIVERPOOL LINT CO.

Mark Street Mills,

LIVERPOOL.

PRICES_DOUBLE. 12/6 16/ 23/ 30/6 37/ 45/6 53/ per doz.

WILLIAM TOOGOOD'S

WAREHOUSE AND SHOW ROOM,

BURLINGTON BUILDINGS,

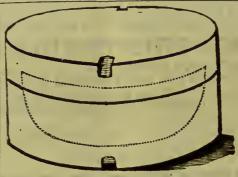
HEDDON STREET, REGENT STREET, LONDON, W.

TOOGOOD'S

IMPROVED PATENT

EARTHENWARE COVERED POTS

Are claimed to be the most perfect and convenient yet offered to the Trade.



ORDINARY THIOKNESS—
1 dr. 2 dr. ½ ¼ 1 1½
1/6 1/6 1/6 1/8 1/10 2/

THIN FOR DISPENSING—
½ ½ 1 1½ 2
1/7 1/9 2/ 2/2 2/5

Owing to the increasing demand for our Patent Pots, we have introduced a Special THIN Series for Dispensing.

These Pots are beautifully glazed and finished, and, being very light, are specially adapted for sending by post.

2 3 4 8 8 eunces.

2/8 2/10 8/6 4/6 5/6 per dox.

3 4 8 8 cunces.

3 4 8 8 cunces.

4 / 5/ 6/ per dox.

TOOGOOD'S NEW REGISTERED SLIDE BOXES FOR POWDERS, &c.

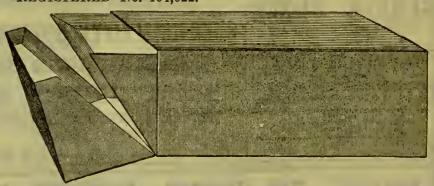
REGISTERED No. 154,622.

PRICES.

For 6 12 18 24 Powders
White Enamel

6/9 7/9 8/9 9/9 gross

Purple ... 7/9 8/9 9/9 10/9 ,,



TOOGOOD'S AIR-TIGHT AND GREASE-PROOF PAPER

FOR PACKING LINSEED MEAL, JUJUBES, &c. Demy

Demy size, 6/6 ream.

TOOGOOD'S PATENT BRONCHITIS AIR KETTLE,

51/- per dozen.

SOLE AGENT FOR DR. LEE'S STEAM DRAFT INHALERS.

S. MAW, SON & THOMPSON'S GREEN FLINT DISPENSING BOTTLES, &c.

Fig. 97, FLAT.

Fig. 97a, FLAT. Rounded Corners.

Fig. 86, CHELTENHAM.
Rounded Corners.
Patent Stoppers.

For Prices in Crates, see Quarterly Price-Current, page 44.

Fig. 98, CVAL.

Fig. 202, OVAL,

Fig. 203, FLAT.

For White Flint and all other Bottles, see Quarterly Price-Current, pages 44 to 48.

4. a "b			2	8	4	8	8	10	12	16	20	Ounce.
Fig. 97	•••	•••	10/-	11/6	11/6	12/9	12/9	20/6	20/6	23/6	30/-	Best, per gross
22		•••	7/9	8/6	8/6	10/-	10/-	13/3	14/9	20/-	25/6	2nd, ,,
Fig. 97a	•••	•••	10/-	11/6	11/6	12/9	12/9	•••	•••	•••	•••	Best, ,,
7,7		•••	8/-	9/-	9/-	10/6	10/6	•••	• • •	• • •	• • •	2nd, ,,
Fig. 98		• • •	10/-	11/6	11/6	12/9	12/9	20/6	20/6	23/6	30/-	Best, "
	•••	•••	7/9	8/6	8/6	10/-	10/-	13/3	14/9	20/-	25/6	. 2nd, ,,
Fig. 292	• • •	•••	} •••		11/6	12/9	12/9			•••		Best, "
Fig. 203		•••	.)	11/6	11/6	12/9	12/9	20/6	20/6	23/6	•••	Best, "
Fig. 86	• • •	•••		• • •		20/-	20/-	•••	•••	***	•••	Best, "

USUAL DISCOUNT.

S. MAW, SON & THOMPSON, LONDON.



H. BARRET

Flint Glass Bottle Works,

THE OVAL, CAMBRIDGE HEATH, LONDON, E.

THE HEART SCENT BOTTLE (Reg.), for Salts or Perfume.

Is mest admirably adapted for pooket use, combining great beauty of design with the maximum of conveniencs.

Price, Piain or Fluted (in 5 GROSS lots):—12/8 per gross. Assorted WHITE and COLOURED.

N.B...The Caps for these will be fitted, if desired, with indestructible washers, to resist the action of ammonia, which destroys oork in a short time.

METAL SCREW-CAPPED LIMES, in Whits Flint, Actinic Green, or Amber The Best Bottle for Glycerine or Pills. Prices: 1 oz. 13/6, 2 oz. 15/-, 3 oz. 18/-, &c. per gross

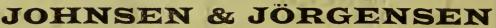
Chemists' and Perfumers' Bottles in great variety, Plain or Stoppered.

Orders may be sent to the PRINCIPAL WHOLESALE HOUSES. TELEGRAPHIC ADDRESS_"FOREFRONT LONDON."



FLATS, OVALS, & SQUARES.

Without exception the prettiest Tinted Bottles in the Market Equal to the best make. Prices moderate.



SAVAGE GARDENS, LONDON, E.C.



TRADE MARK.

FEEDING

Made in Vulcanite & Pure Tin, & can be adapted to any ordinary Feeding Bottle in use.

These Regulators are the best ever brought out. The advantages are many and obvious. They are easily cleaned, simple in construction, perfect in action, and regulate the food or milk to the greatest nicety without injury to the tubing. The Tap, when turned off, precludes the possibility of air entering the stomach when the bottle is empty, thus combining a Feeding Bottle and Baby Comforter in one.

Put up on Cards-1 dozen Vulcanite, 4s. per dozen; 2 dozen Tin, 1s. 6d. per dozen. PRICE LIST OF FEEDING BOTTLES ON APPLICATION.

SOLE LICENSEE-

SCRIVEN. Medical Bottle Manufacturer and Druggists' Sundriesman.

BRIERLEY HILL, STAFFORDSHIRE.

REDUCED PRICES.

3 and 4 oz., 7/6; 6 and 8 oz., 8/6; 12 oz., 12/-; 16 oz., 16/- per gross.

ORYSTAL (BLUE TINTED), 3 and 4 oz., 9/-; 6 and 8 oz., 10/-; 12 oz., 14/-; 16 oz., 18/- per gross. WHITE PHIALS,

½ oz., 3/8; 1 oz., 4/3; 1½ oz., 4/9; 2 oz., 5/6 per gross. WHITE PHIALS (SUPERIOR QUALITY). ½ oz., 4/3; 1 oz., 5/3; 1½ oz., 5/9; 2 oz., 6/3 per gross.

Ι. ISAACS & CO.

GLASS BOTTLE MANUFACTURERS 25 FRANCIS STREET, Tottenham Court Road, LONDON. BANKERS: LONDON AND WESTMINSTER BANK.

ESTABLISHED UPWARDS OF 50 YEARS.

ACENTS FOR THE "RELIANCE" MEDICINE DROPPER.

STOKES' CHECK TILL SYSTEM.

A SOUND INVESTMENT.



Each Till has only to display 2d. per week deficiency to return 15 per cent. on outlay.

> 30,000 Sales Checked for

3 SHILLINGS.

Terms and full particulars on application.

G. R. STOKES & CO., Limited, Hanley, STAFF.





TRUSSES, ELASTIC STOCKINGS, KNEE CAPS. CHEST EXPANDERS, PESSARIES, ABDOMINAL BELTS, BANDAGES, ETC., ETC.

There is no department in a Chemist's business so profitable, and yet. generally speaking, so little cultivated, as SURGICAL APPLIANCES. A Chemist who has anything like a connection in above articles, or similar ones, can well afford to see his patent-medicine trade go to the grocers, or anywhere else. Moreover, there is not the least difficulty in the world in doing it—any of the things at the top of this page can be had per return of post from Ayrton & Saunders at an expense of three-PENCE for postage. It simply means sending a postcard one evening, and the article (unless it has to be specially made) can be had by the following evening; or, if the case be very urgent, a sixpenny telegram or telephonic message will bring it immediately.

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GLASS BOTTLES





ALL SHAPES, SIZES, AND COLOURS.

DISPENSING

In Green and White Flint. All the regular sizes in Flats, Ovals, Rounds, Octagons, and Direct Squares.

The "K" Brand is well known, and is in constant and increasing demand.

FEEDING. "OUR BAB

"OUR BABIES' BOTTLE."

Fitted in a large variety of styles to suit all classes of buyers. Careful attention given to quality of Glass and Rubber. Increasing sales testify to the satisfaction thus afforded. Feeders with Customer's own name supplied when preterred.

MINERAL WATERS.

Codd's, Bulbs, and all the best Stoppered Bottles; large and splits. Also CORK BOTTLES to suit all requirements, plain or lettered.

VAN BOXES AND CASES.

In several styles, to contain above and many other kind; of Bottles.

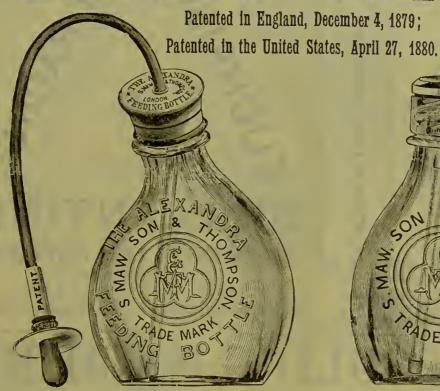
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No. 3A GREAT NORTHERN GOODS STATION, KING'S CROSS, LONDON.

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THE ALEXANDRA. (Earthenware Cap.)



THE EXPORT. (Glass Screw Stopper.)

	W	ite Fitti	ngs	Black Fittings			
Alexandra, Wood Top Corksper doz.	3/-	4/-		3/3	4/3	_	
Alexandra, Glass Screw Stoppers,	_	4/3	_	3/9	4/6		
Export, Wood Top Corks,	2/9	3/9		3/-	4/-		
Export, Glass Screw Stoppers,	_	4/3	_	3/9	4/6		

The following are sent out with Black Fittings unless ordered to the contrary.

	Wi	th Ordinary Fittings	With valve and Patent Fittings		
Alexandra, Earthenware Capsper doz.	_	7/6 11/-	·	8/6 12	2/-
Alexandra, Glass Screw Stoppers,	_	7/6 11/-	_	8/6 12	2/-
Export, Earthenware Caps,	_	7/	_	8/	_
Export, Glass Screw Stoppers,	-	7/	_	8/- -	_

SPECIAL DISCOUNT FOR QUANTITIES.

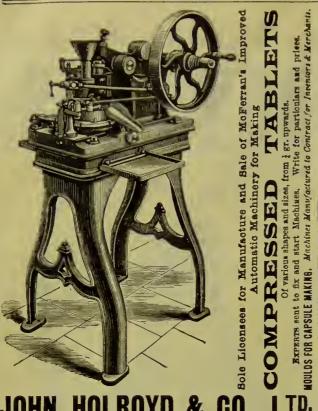
Not less than £5 worth each or assorted... 10 per cent. off Invoice and 5 per cent. Cash. Not less than £10 worth each or assorted... 15 per cent. off Invoice and 5 per cent. Cash.

Carriage paid to any part of the United Kingdom, Isle of Man, and Channel Islands, at the following discounts:

Not less than £5 worth each or assorted... 5 per cent. off Invoice and 5 per cent. Cash.

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Engineers, Tool Makers, and Machinists.

TOMLINSON STREET WORKS, HULME, MANCHESTER.

H. P. TRUEFITT'S SPECIALITIES FOR THE HAIR.



RILLANTINE.

'S TONIC TOOTH BRUSH

(BY ROYAL LETTERS PATENT.)

PRICE ONE SHILLING.

20 & 24 Burlington Arcade; 13 & 14 Old Bond St., London.

NEW CAPSULING MACHINE

The only Machine which leaves no crease or pleat on the Capsule.



Can be fixed to any Counter. A single pull of the lever is sufficient to fix the Capsule.

Patentee-C. MELIN, 37 Orutched Friars, LONDON, E.C.

144 and 147 NARROW STREET, LIMEHOUSE, LONDON, E.,

MEDICAL, PERFUME OIL, SAUCE, &c., BOTTLES QUALITY, AT LOW PRICES.

Scientific Dentifrice.



SPECIAL NOTICE.

All Chemists, Drug Houses, &c., publishing Price Lists are invited to send Copies of same, stating terms for Advertisements, to SALVINE CO., 3 Oxford St., London, W

HANDSOME VALUABLE SHOWCARDS FREE on application DIRECT,

72

STAPLES' Patent FLUID NON-POISONOUS | SHEEP DIP & CATTLE CLEANSER. POISONOUS POWDER DIP

(Warranted to remain dry, and not discolour Packages).

WEED DESTROYER. DISINFECTING FLUID & POWDER.

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Staples' Patent Dips have an established reputation, and are guaranteed to give satisfaction.

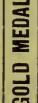
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G. B. KENT & SONS

Have been awarded the ONLY







At the Paris Exhibition, 1889, for

ENGLISH BRUSHES

See pages 169-172 WINTER ISSUE, January 31st, 1891.

A WORD TO THE WISE.

Chemists who wish to increase their returns, read and pouder over the following:—There are in England millions of birds kept in eages; what do you do to eater for them? In every town there are a large number of hird-fanciers, who use a quantity of bird foods, and every chemist can supply them with advantage and profit to himself.

The proprietor of Capern's Specialities for eage hirds was a cinemist for 20 years, and can therefore speak with experience as to the feasibility of working bird foods in conjunction with a chemist's business. In every town there are bird oluhs, and foods of various kiuds are used, and chemists should lay themselves out to supply these wants. Wby, in the city of Glasgow aione we sell £1,200 of our packed goods and in many a viliage in Wales hundreds a year. Some time since a pharmaceutical chemist wrote to us for one of our preparations for a customer of his; as we had no agent in his town we offered it to him. He answered—No! he thought there were no birds kept there, and he didn't think he would stock them. We offered him them on sale or return, and now his orders amount to a good many pounds' worth each time, and increase with each order.

In Norwich one firm alone sells about 40,000 canaries a year, and they are valuable stock. A crested Norwich sold for £80, and a Scotch fancy canary sold for £40, besides bringing in about £30 in one year in prizes.

All our goods have been thoroughly experimented on before bringing out. We import all our seeds direct from abroad to guarantee their sweetness and quality. We import hundreds of tons of seeds yearly. Our sales of only one of our seed mixtures during 1889 was 290 tons, and our mixture for blackhirds and thrushes 40 tons. We give every facility and advice to chemists to promote the sale of our goods. They are well got up and fit for any counter. Any goods found unsaleable will be allowed for if returned carriage paid. We send handsome showcards and handhills. Ahout a £2 order we send carriage paid. Write for wholesale list to-day.

F. CAPERN, Bird Specialist, BRISTOL.



SUPERFATTED MEDICINAL SOAPS

PREPARED FROM PRESCRIPTIONS AND UNDER THE CONSTANT CONTROL OF

Dr. MED. J. EICHHOFF, Senior Physician to the Wards for Skin and Venereal Diseases of the Elberfeld Hospital.

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SUPERFATTED RESORGINE SALICYLIC SOAP.

SUPERFATTED RESORCINE SALICYLIC SULPHUR SOAP.

SUPERFATTED RESORGINE SALICYLIC SULPHUR TAR SOAP.

SUPERFATTED QUININE SOAP.
In mild cases of Mycosis, especially Pityriasis Versicolor.

SUPERFATTED IDDOFORM SOAP.

For Chronic Ulcers, Venereal Bolls, &c., and also in the Massage Treatment of Small Tumours and Exudations.

SUPERFATTED HYDROXYLAMINE SOAP.

In Lupus, Psoriasis, Tinla Tonsuraus and Parasitic Sycosis.

SUPERFATTED CREOLINE SOAP.

In Scabics, Impetigo Contagiosa, Intertrigo, Lupus

SUPERFATTED ERGOTINE SOAP.

In Rosacea, Angicetasis, mild cases of Varix, and in the Massage Treat-ment of Migraine.

SUPERFATTED IODINE SOAP (READILY SOLUBLE).

For Small Tumours, Iudolent Ulcers, Lupus, Parasitic Eczema, Sycosis and Mycosis.

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In General and Local Pruritus (especially Genital and Anai).

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SUPERFATTED SULPHUR CAMPHOR, PERUVIAN BALSAM SOAP.

SUPERFATTED SALICYLIC ICHTHYOL SOAP.

In Acne Vulgaris, Acne Rosacca and Eczems, also in the Massage Treatment of cases of Articular and Muscular Rheumatism.

SUPERFATTED THYMOL SOAP.

Recommended as a Purc Hygicuic Soap for duly use, especially for children.

SUPERFATTED RESORGINE SOAP.

Seborrica, Parasitic Eczema and Erysipeias

SUPERFATTED ICHTHYOL TAR SOAP.
Dermatomycosis, Psoriasis, Chronic Palmar and Plantar Eczoma.

SUPERFATTED MENTHOL EUCALYPTDL SDAP.

Urticaria, Prurigo, also in the Massage Treatment of Migraine, as well as a disinfecting scap for medical meu, patients and their attendants (in infectious

SUPERFATTED SALICYLIC SOAP.

SUPERFATTED SALICYLIC SULPHUR SOAP

SUPERFATTED SALICYLIC SULPHUR TAR SOAP.

SUPERFATTED SUBLIMATE SOAP, ½ AND 1 %.

SUPERFATTED BENZOIC SOAP.

A Sanitary Tollet Soap for Intertrigo, Feurf, &c.

SUPERFATTED PINE-NEEDLE EXTRACT SDAP.

In Massage Treatment of Rheumatic Affections and Parasitic Skin Diseases, also as a Disinfecting Soap for medical men, patients and attendants.

SUPERFATTED THIOL SOAP, 5 % AND 10 %, In Parasitic Eczema, Mycosis, Acne Vulgaris, Acne Rosacea

(c. f. "Dermatologische Studien," Second Series, Vol. I. for 1889, and also "Volkmann'sche Sammlung Klinischer Vorträge," New Series, Vol. IV. 1890.)

Sole Manufacturer: - FERD. MULHENS, No. 4711, Glockengasse, Cologne-on-Rhine.

Under the constant supervision of Mr. J. BRASCHOSS, of Cologne, Pharmaceutical Chemist. Agents for the United Kingdom-KROHN BROTHERS & CO., BILLITER BUILDINGS, BILLITER STREET, LONDON, E.C.

This old-established and celebrated preparation for the Teeth attractively put up in the form of Liquid, Powder, and Paste, is now boing largely advertised to the public.



THE GENUINE

EAU DE BOTOT

IS THE ONLY DENTIFRICE APPROVE By the Academy of Medicine of Paris,



SAMPLE BOXES. Powder, Paste, & Liquid per 8/- doz.

EAU de BOTOT .. 1/6, 11/9; 2/6, 20/; 5/, 32/9 doz POWDER......1/, 8/6; 2/6, 17/ doz.

Of all Wholesale Houses.

N.B .- See each Article has the Signature-



PURE OTTO OF ROSE,

SHIPKOFF & CO.

DISTILLERS AND EXPORTERS.

KIZANLIK, BULGARIA.

Agent for Great Britain-G. P. BAKER, 19 Ivy Lane, LONDON, E.C.

THE OTTO OF ROSE which this house distils and exports is known above all by the absolute purity of its quality and the unexceiled sweetness and strength of its odour. It is guaranteed to be the finest essence produced in the famous Rose Valley of Bulgaria.

Shipkoff's Brand received the only award for Otto of Rose at tho

Dunster House Mincing Lane

LONDON

Civet Attar - of - Rose Musk Ambergris

OILS ESSENTIAL



Wholesale and Export

only.

TO THE WHOLESALE TRADE ONLY.

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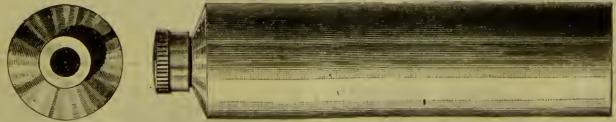
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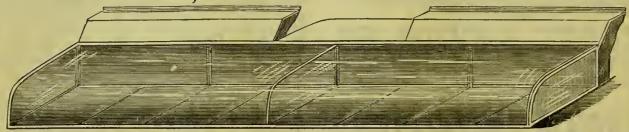
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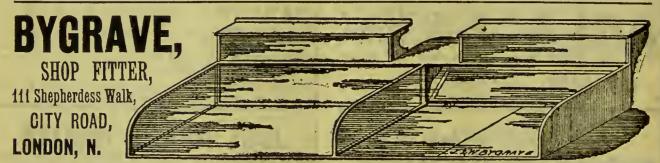
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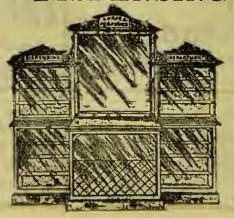
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